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SOLUTIA

Applied Chemistry, Creative Solutions

July 15, 1999

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(Via Certified Mail)

Mr. Kevin Turner
Environmental Scientist, OSC
U. S. Environmental Protection Agency
c/o Crab Orchard National Wildlife Refuge
8588 Rt. 148, Marion, IL 62959

Re: U. S. EPA UAO - Docket No. V-W-99-C-554
Dead Creek Culverts
Sauget Area I

Dear Mr. Turner,

Pursuant to my letter to you dated July 15, 1999, I have enclosed a copy of the Hydrologic and Hydraulic Analysis of Dead Creek for your use. I believe the conclusions in this report provide a solid foundation for proceeding forward with the plan we discussed in our July 8, 1999 meeting and further outlined in the July 15th letter.

Should you have any questions regarding this report, please feel free to call me.

Sincerely,

D. M. Light
Manager, Remedial Projects
Solutia Inc.

enclosure

cc: U.S. Representative Jerry F. Costello
Senator James F. Clayborne, Jr.
Mr. Thomas Martin, Esq. - USEPA
Mr. Mike McAteer - USEPA
Ms. Candy Morin - IEPA
Mr. Brent Gilhousen, Esq. - Solutia
Mr. Joseph Nassif, Esq. - Thompson Coburn
Mr. Frank Miles - Office of Representative Jerry F. Costello
Mr. Mike Campbell - Office of Representative Jerry F. Costello
Mr. Chris Perzan, Esq. - IEPA
Mr. Mike King - Mayor, Cahokia



Applied Chemistry, Creative Solutions

(Via Certified Mail)

July 30, 1999

Mr. Kevin Turner
Environmental Scientist, OSC
U. S. Environmental Protection Agency
c/o Crab Orchard National Wildlife Refuge
8588 Rt. 148, Marion, IL 62959

**Re: June 21, 1999 U. S. EPA UAO - Docket No. V-W-99-C-554
Dead Creek Culverts
Sauget Area I**

- July 8, 1999 Conference in Cahokia to discuss the UAO
- July 15, 1999 Response to the UAO from Solutia to U. S. EPA
- July 15, 1999 Hydrologic and Hydrologic Analysis of Dead Creek, Cahokia, Illinois, by URS Greiner Woodward Clyde
- July 29, 1999 Supplemental Hydrologic Analysis of Dead Creek, Cahokia, Illinois, by URS Greiner Woodward Clyde (sent under separate cover)

Dear Mr. Turner,

Pursuant to Solutia's July 15, 1999 Response to the U. S. Environmental Protection Agency ("EPA") Unilateral Administrative Order (UAO) issued on June 21, 1999 and also pursuant to the July 8, 1999 discussion conference in Cahokia concerning the UAO, this correspondence responds to EPA's request at the July 8 conference that by July 30th, Solutia propose some focused actions which could be implemented in shorter time frames and with more immediate results than the comprehensive proposal presented by Solutia at the Cahokia conference. Solutia committed to meet this request in its Response of July 15, 1999.

Solutia's consultants have conducted additional hydraulic modeling of Dead Creek to determine the most effective and timely means to address the UAO objectives. The proposal presented in this correspondence involves short term projects designed to both reduce the potential for creek bank overflow and also address the source of contaminated

sediments. The following summarizes the Work elements proposed for inclusion in the UAO:

1. Reduce the potential for creek bank overflow
 - 1.1. Remove above grade vegetation in the creek bed between Route 3 and the Terminal Railway ROW.
 - 1.2. Remove and replace the culvert at Cargill Road.
 - 1.3. Remove the culvert and open a channel at the Terminal Railroad ROW
2. Address the contamination source
 - 2.1. Install facilities to pump water from Sector B to the American Bottoms Waste Treatment Plant (WTP) during periods of high flow conditions
 - 2.2. Remove contaminated sediments from Sector B and contain in an on-site double-lined containment cell.

Reduce the potential for creek bank overflow

The creek hydrologic study shows that significant restrictions to flow in Dead Creek occurs between Route 3 and the Terminal Railroad right-of-way (ROW). Upgrading of the Cargill Road culvert and removal of Terminal Railroad ROW culvert provides a significant improvement and can be completed quickly. Although removal of these restrictions would beneficially affect the lower reaches of the creek primarily, the effects would extend into the heavily populated area just north of route 157. This proposed action is further facilitated by the fact that contamination does not present a sediment disposal problem in this downstream section of the creek.

It is envisioned that the Cargill Road culvert would be replaced with a pre-cast concrete box culvert similar in size to the culvert beneath Route 3 (Mississippi Ave.). This could be accomplished within a weekend, thus preventing severe disruption to access by commercial interests currently utilizing Cargill Road. Removal of the culvert at the Terminal Railroad ROW would involve: (i) obtaining access and other agreements from Terminal Railroad with the assistance of EPA; (ii) cutting a "v-notch" in the ROW and removing the culvert, and; (iii) stabilization of the banks created by the excavation. There are also 4 pipelines in the ROW that have to be investigated. Heavy undergrowth and above grade vegetation would also be removed in the creek from Route 3 to the open channel through the railroad ROW to further facilitate creek flow during high flow conditions.

It is estimated that this work could be completed within 90 days of notification to proceed.

Address the contamination source

As described in detail in Solutia's July 15, 1999 initial Response to the UAO, the July 15, 1999 URS Greiner Woodward Clyde Hydrologic and Hydrologic Analysis shows that, even if all culverts in Dead Creek were eliminated, the potential for overbank flow would still remain. Therefore, Solutia has looked further into how to be responsive to the UAO and its assertion of the existence of an "...imminent and substantial threat to public health, welfare, or the environment..." (UAO Section IV, Conclusions of Law and Determinations, Item 6).

Dead Creek has been studied extensively over a several year period. It is well documented that Sector B, bounded by Queeny Avenue on the north and Judith Lane on the south, contains the highest concentration of contamination within the sediments. Therefore, since the potential for overbank flow cannot be practically eliminated in a reasonable timeframe - even if all of the culverts in Dead Creek are eliminated - addressing the contamination source is the logical alternative.

Sector B is well characterized and within a geographically focused area. Therefore, Solutia proposes to conduct the following Work under the UAO:

1. Pump water from Sector B

As a short term exposure reduction measure, to minimize the potential for water from Sector B to overtop the bank at Judith Lane, Solutia will install temporary hard piped facilities designed to remove approximately 1000 GPM¹ from Sector B to the American Bottoms wastewater treatment plant. Utilizing EPA's Emergency Removal authority and working with American Bottoms, this installation could be completed in a relatively short timeframe. The pumping system would be designed to operate during high flow conditions only.

2. Remove and contain the contaminated sediments from Sector B.

This element of the Work provides the most significant mitigation of the potential for exposure to contaminated sediments in Dead Creek. The sediments in Sector B would be gravity dewatered and placed into a double-lined containment cell on property contiguous to Sector B and owned by Solutia. Again, utilizing the Emergency Removal authority of EPA, the containment cell could be sited, designed and installed in a short timeframe, perhaps 6-12 months from notification to proceed.

Removal of the contaminated sediments from Creek Sector B and containment in an environmentally protective double-lined cell, under the UAO, would provide

¹ Proposed pumping rate based on the experiences of Cahokia in the 1993 floods.

both fast and permanent reduction in the potential for exposures to the sediments from overbank flow. Additionally, by eliminating the potential exposure pathway to the contaminated sediments in an expedited manner, cleanup of the creek would be jump-started by perhaps several years. Creek cleanup is a prerequisite to initiation of the Cahokia Plan, Part II - the comprehensive water management project for Cahokia.

Although Solutia is unaware of any evidence supporting EPA's conclusions of an "...imminent and substantial threat to public health, welfare, or the environment..." (UAO Section IV, Conclusions of Law and Determinations, Item 6), Solutia believes the proposal outlined here is the most appropriate course of action for all stakeholders involved. Solutia will negotiate in good faith an enforceable commitment to implement the above proposed Work under the UAO.

Sincerely,

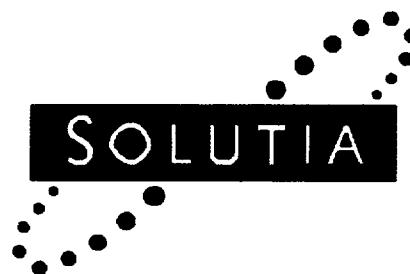


D. M. Light
Manager, Remedial Projects
Solutia Inc.

cc: U.S. Representative Jerry F. Costello
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 Mr. Mike Campbell - Office of Representative Jerry F. Costello
 Mr. Brent Gilhousen, Esq. - Solutia
 Mr. Joseph Nassif, Esq. - Thompson Coburn

R E P O R T

**HYDROLOGIC AND HYDRAULIC
ANALYSES OF DEAD CREEK
CAHOKIA, ILLINOIS**



Prepared for
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10300 Olive Blvd.
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July 15, 1999

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2399STL022.00-3

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Executive Summary

This hydrologic/hydraulic study of Dead Creek in the Village of Cahokia, Illinois, was undertaken to estimate the overbank flood levels along Dead Creek under existing conditions and to assess the changes in flood levels in the creek due to changes in the conveyances at road crossings over Dead Creek. The analysis includes hydrologic modeling to estimate the surface runoff discharging to the creek and hydraulic modeling to estimate the overbank flood levels for a series of storm events (the 1-, 2-, 5-, 10-, 25-, 50-, 100-, and 500-year storm events). The hydraulic model was used to estimate the following:

- Alternative 1: The reduction in maximum overbank flood levels that could be achieved by removing all sediment and debris from culverts along Dead Creek that currently partially or totally obstruct flow through them.
- Alternative 2: The largest reduction in maximum overbank flood levels that could be achieved by structurally modifying the hydraulic structures used for Dead Creek road crossings.

The models integrated the best available topographic, channel geometric, structural and other hydraulic data from an April 1999 survey and previous studies. The hydraulic model considered 12 culverts at various road crossings over the creek, the existing Cahokia Slough, and the pump at the Cahokia pump station.

The modeling results indicate that under the existing conditions, flood levels of the 100-year frequency storm will overtop the banks in most of the reach upstream of the Terminal Railroad/Cargill Elevator Rd. The road crossings at Route 3 and Edgar St. will be overtopped from the 100-year storm. The modeling results also indicate that overbank flooding is not likely to occur along Dead Creek for storm events smaller than the 2-year frequency storm.

Due to the flat topography in the watershed, there are depressions on both sides of the creek where significant amounts of runoff could pond before draining into the creek. As such, ponding behind the banks is likely to occur on both sides of the creek upstream of Edgar St., especially between Jerome Ln. and Judith St. On the east side of the creek at Kinder St. and Cahokia St., a large portion of the residential area is below the bank elevation and thus is subject to ponding directly from rainfall before overbank flooding occurs.

The simulation results of the two alternatives indicate that a less than 0.7 foot decline in the maximum water surface elevation could be achieved from cleaning out the debris/sediment in the culverts (Alternative 1).

Executive Summary

If all the culverts are re-configured to eliminate head loss across the culverts other than frictional loss (Alternative 2), the modeling results showed that the low bank was still overtopped at eight points.

The modeling results of Alternative 2 also suggest that bringing the culverts up to current design standards is not likely to completely solve the overbank flooding problem, particularly for large storm events. For instance, the predicted 100-year flood level in the creek upstream of Cahokia St. is above 404.56 ft, which would overtop the bank elevations in the area. Further analyses including a detailed survey of the overbank elevations and refined hydraulic modeling are needed to support this observation.

The insights provided by the hydraulic modeling activity, including not only the modeling results themselves but also the observations of watershed conditions made for model development, indicate that the problems of Dead Creek are not solely, or perhaps not even primarily, the occurrence of flood flows overtopping the banks of Dead Creek. Lack of adequate drainage of accumulated waters in low lying floodplain areas beyond the banks of the creek appears to be a significant source of the apparent flooding problems in the Dead Creek watershed. Such accumulations of waters in low lying areas outside the banks of the creek itself in areas of residential and commercial development can result not only from floods of moderate to large magnitude (but of relatively infrequent occurrence) overtopping the channel banks, but also directly from rainfall which does not have the ability, because of topography and lack of adequate drainage infrastructure, to drain to the creek once accumulated. These latter type of accumulations, while perhaps not as severe as those from overbank flooding, could be expected to occur more frequently than accumulations from overbank flooding. Thus the flooding problems in the Dead Creek watershed appear to be a complex mixture of conditions arising not only from the impediments to movement of flood waters down Dead Creek but also inadequate drainage infrastructure in floodplain areas outside the creek banks where residential and commercial development occurs.

Potential resolution to the flooding problems in Dead Creek must therefore consider both in-creek and out-of-creek controls. In order to prevent overbanking utilizing the existing creek channel, in-creek controls would have to include widening or deepening of the existing creek channel in combination with enlarging or replacing the existing culverts. In addition or alternatively, alternate, more direct storm water removal pathways should be evaluated. Out-of-creek controls could include intentional creation of detention areas (where no harm to residential or commercial structures would occur); construction of surface ditches and underground storm water sewers, with possible sump and pump systems being necessary to prevent backup of creek waters into the storm

Executive Summary

sewer system and lift storm waters to heights adequate for drainage to the creek; filling of low lying areas, with possible resetting (i.e., lifting) of building floor levels; or buyout of properties in highly flood prone areas, with possible conversion of such areas to intentional detention areas.

The purpose of this study was to estimate the overbank flood levels along Dead Creek under the existing conditions and to assess the changes in flood levels in the creek due to changes in the conveyances at road crossings over Dead Creek. The hydraulic analyses of flood conditions had the particular objectives of:

- Estimating the reduction in maximum overbank flood levels that could be achieved by removing all sediment and debris from culverts along Dead Creek that currently partially or totally obstruct flow through them.
- Estimating the largest reduction in maximum overbank flood levels that could be achieved by structurally modifying the hydraulic structures used for Dead Creek road crossings.

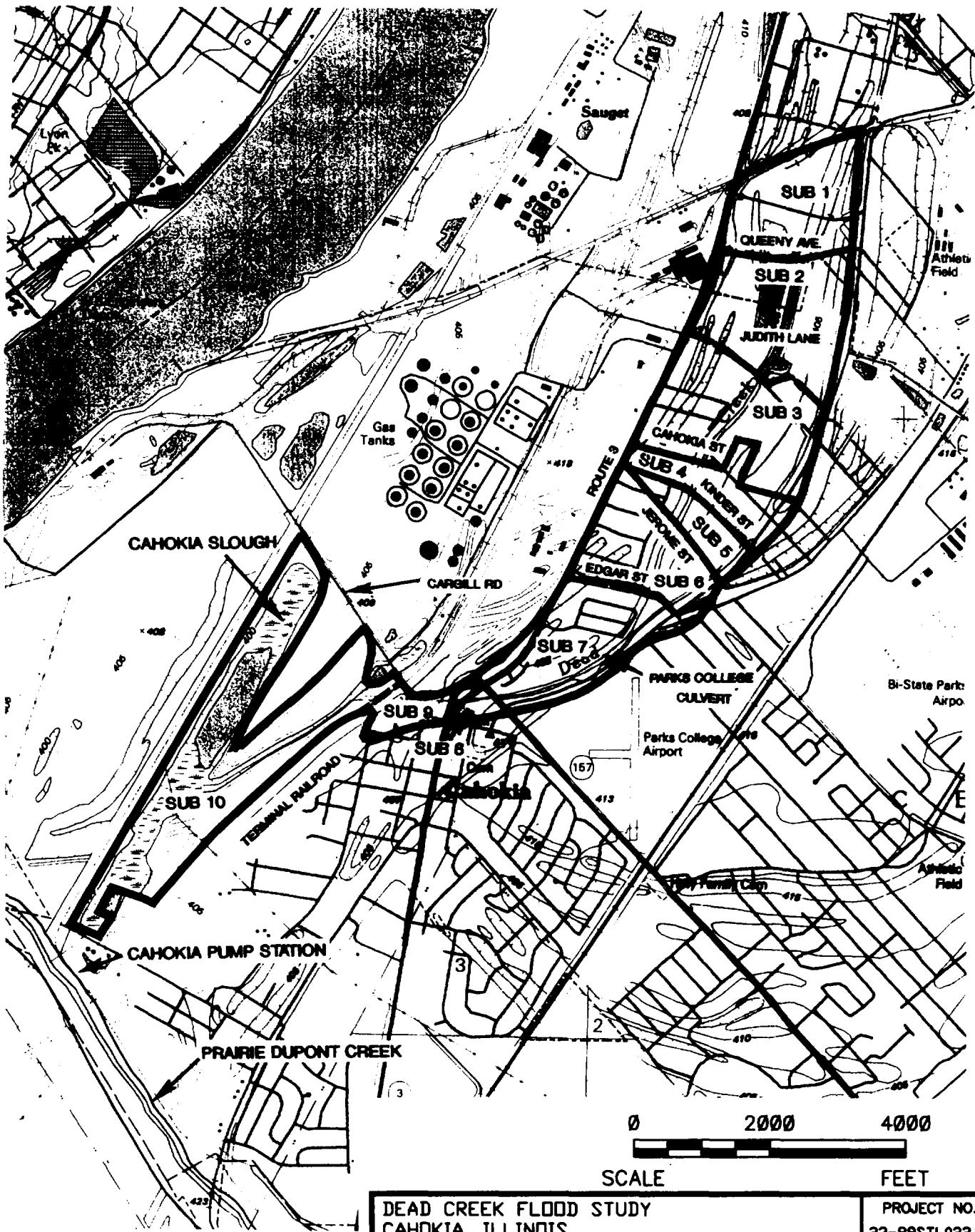
The scope of work for accomplishing these objectives included surveying the structures and channel cross sections along Dead Creek, revising the previous hydrologic analyses done by others, developing an unsteady-state hydraulic model for Dead Creek, and reporting the modeling results.

The reduction in overbank flood heights from current levels was determined for two scenarios: 1) complete removal of sediment and debris from all the existing culverts; and 2) removal of the culverts and channel crossing embankments so as to eliminate all energy loss through the area of a road crossing due to all effects other than frictional resistance.

These hydrologic and hydraulic analysis were conducted for the critical storm event (the 12-hour 100-year frequency storm) and other selected frequency storms (the 1-, 2-, 5-, 10-, 25-, 50-, and 500-year storm events).

1.1 BACKGROUND

Dead Creek is located on the east side of St. Louis in the Village of Cahokia, Illinois, between the Gulf, Mobil, and Ohio railroad tracks and the Illinois Terminal railroad (Figure 1). The creek is approximately 3 miles long with a total contributing drainage area of approximately 1.1 square miles. The watershed consists of residential, commercial, industrial and agricultural land, and is reportedly subject to periodic flooding. There are 11 crossing structures (10 roadway and one abandoned railroad embankment) along the length of the creek. Approximately 600 feet of the creek is also conveyed underground in a 42-inch-diameter culvert at the Park College Airport. Many of the conveyance structures are currently partially or totally blocked with debris and sediment.



LEGEND

- WATERSHED BOUNDARY
- - - SUB BASIN BOUNDARY

DEAD CREEK FLOOD STUDY
CAHOKIA, ILLINOIS

PROJECT NO.
23-99STL022.00

URS Greiner Woodward Clyde

A Division of URS Corporation

DRN. BY: djd 7/13/99
DSGN. BY:
CHKD. BY:

Site Location and
watershed Description

FIG. NO.
1

The stream has an average bed slope of 3 feet per mile (COE, 1976) and, in places, the stream banks are higher in elevation than the surrounding land that drains towards the creek (COE, 1976). At the downstream end of the drainage area is an approximately 1.3-mile-long wetland area referred to as the Cahokia Slough (COE, 1976). This area adjoins the stream and provides flood detention storage. At the mouth of Dead Creek is the Cahokia pump station which pumps the flow from Dead Creek over the Prairie du Pont levee into Prairie du Pont Creek when the water level in the Mississippi River reaches a critical level (see discussion in Section 3.3). The flow then discharges into the Cahokia Chute and ultimately into the Mississippi River. The pump station has a pumping capacity of 91 cubic feet per second (41,000 gallons per minute). The pump is turned on and off manually depending on the water level in the nearby Mississippi River.

Due to the flat topography of the watershed, there are many depression areas along the creek where significant amounts of runoff could pond before draining into the main channel. The undeveloped areas within the watershed are heavily vegetated, especially along the banks of the creek. Obstructions to flood flows include the large number of trees, brush, and other types of vegetation growing along the stream banks in the floodway area. Man-made encroachments on or over the channel such as roads, bridges, and culverts also create more extensive flooding than would otherwise occur. Debris plugging the culvert mouths and sediment inside the culverts could also contribute to the flooding problem.

1.2 EXISTING INFORMATION

Flooding of the surrounding areas and roadway overtopping has been recorded in the past. A hydrologic study of Dead Creek produced by the U. S. Army Corps of Engineers (COE) in 1976 indicates that the past floods on Dead Creek which had caused significant damage were in 1903, 1915, 1942, 1943, 1946, 1957, and 1969. However, the degree of damage was not available and the maximum water levels in the creek during these storm events were not recorded. The COE report evaluated the hydrology and hydraulics in the watershed during two severe storms under the assumption that debris and sediment in the culverts and creek were cleaned out. These storms were the Standard Project Flood, which is less than one-half of the Probable Maximum Flood, and the Intermediate Regional Flood, which is the 100-year, 96-hour frequency flood event. The study estimated the flood levels along the creek during these storm events and indicated that overbank flooding was likely to occur upstream of the Terminal Railroad during these severe storm events.

The COE report backup provided some survey information on road crossing structures which were not used in this study because a more detailed survey was conducted of the crossings specifically for this study. The hydrologic analysis results in the COE report were not used in this study because regional rainfall and unit hydrograph derivation techniques that further refine hydrologic analysis for the Illinois Basins have been developed (Singh, 1981a and 1981b) since the publication of the COE report.

2.1 BASIN CHARACTERIZATION

The drainage basin for Dead Creek is 1.1-square miles and is shown on Figure 1. The drainage basin was divided into eleven subbasins that contribute runoff to each major roadway within the drainage basin. Watershed characteristics, including drainage area, stream distance, channel slope and land use for each subbasin, were obtained from the 1:2400 scale aerial topographic maps of the basin with 2-foot contours (COE, 1973) and are summarized in Table 1. The average channel slope in the upper watershed (above Terminal Railroad) was computed to be 4.6 feet per mile and 3.8 feet per mile in the lower watershed.

The Soil Conservation Service's (SCS) infiltration model was used to estimate the infiltration potential and runoff from the subbasins. Effects due to groundwater behavior were not considered. The SCS runoff curve number for each subbasin was estimated according to the Technical Release 55 "Urban Hydrology for Small Watersheds" (TR-55) watershed analysis method. According to the soil survey of St. Clair County (SCS, 1973), the soils within the basin are partly sandy loam Landes soils (hydrologic soil group B) and silty clay loam Riley soils (hydrologic soil group C). Thus a curve number between 76 and 90 was selected for the subbasins in the watershed. A curve number of 100 was assigned for the Cahokia Slough near the downstream end of the creek because it is most likely filled with water and infiltration is negligible.

TABLE 1
Summary of Hydrologic Characteristics

Subbasin No.	Structure	Stream Distance ¹ (miles)	Drainage Area (sq. mi)	Channel Slope (ft/mi)	SCS Runoff Curve No.
SUB-1	Queeny St ²	3.00	0.11	3.14	90
SUB-2	Judith St	2.66	0.13	4.95	83
SUB-3	Cahokia St	2.37	0.16	1.29	81
SUB-4	Kinder St	2.30	0.06	8.89	81
SUB-5	Jerome Ln	2.20	0.04	-23.11	81
SUB-6	Edgar St	2.00	0.09	4.71	85
SUB-7	Rte 157	1.46	0.12	0.74	85
SUB-8	Rte 3	1.36	0.02	4.17	82
SUB-9	Cargill Elevator Rd/ Terminal RR	1.16	0.03	5.63	85
SLOUGH	(No rd crossing)	0.89	0.17	3.72	100
SUB-10	Levin Dr	0.05	0.13	4.71	76

Notes: 1-Distance from mouth of Dead Creek.

2- Survey of this structure was not conducted and thus not included in the model

2.2 PRECIPITATION AND CRITICAL STORM SELECTION

The precipitation depths used for each storm frequency studied were obtained from "Frequency Distribution and Hydroclimatic Characteristics of Heavy Rainstorms in Illinois [Bulletin 70]" (Huff, 1988) for the West-Southwest region. The Huff distributions curves were used to analyze the 6-, 12-, 24-, and 48-hour, storms to determine the duration of the most critical storm (Singh, 1981a). The 100-year frequency storm for each duration was modeled using the HEC-1 flood hydrograph analysis package developed by the COE. The results indicate that the 12-hour storm is the most critical since it created the maximum peak flows and stages. The 12-hour duration was assumed to be the critical duration for the 1-, 2-, 5-, 10-, 25-, 50-, and 500-year storm events without detailed HEC-1 modeling.

2.3 UNIT HYDROGRAPH

Unit hydrographs were developed for each subbasin used in the HEC-1 model from unit hydrograph derivation equations specific to the West-Southwest region of Illinois (Singh, 1981b). Subbasin area, stream distance and channel slope were used to develop the unit hydrographs for each subbasin. Each subbasin unit hydrograph was derived for a 10-minute time step.

2.4 HYDROLOGIC MODELING

The HEC-1 program uses precipitation data, subbasin area, SCS runoff curve number, and unique unit hydrographs to compute runoff over time for each subbasin. Hydrographs are combined with each subsequent hydrograph downstream as appropriate. The model was used to produce runoff hydrographs at the critical roadway crossing structures along Dead Creek for the 1-, 2-, 5-, 10-, 25-, 50-, 100-, and 500-year frequency storms. The resulting storm flows from all subbasins were then routed through the creek by the hydraulic model that is discussed in Section 3 of this report. Table 2 summarizes the HEC-1 results for the runoff from individual subbasins along the channel. A complete printout of the HEC-1 output is provided in Appendix A.

SECTION TWO

Hydrologic Analyses

TABLE 2

Peak Surface Runoff from HEC-1 Subbasins for All Frequency Storm Events

Subbasin No	Peak Flows for Various 12-hour Duration Flood Frequencies, cfs							
	500-Yr	100-Yr	50-Yr	25-Yr	10-Yr	5-Yr	2-Yr	1-Yr
SUB-1	93	69	59	49	39	31	23	17
SUB-2	108	79	66	54	41	32	23	16
SUB-3	82	58	48	38	29	22	15	10
SUB-4	39	29	24	19	15	11	8	6
SUB-5	19	14	11	9	7	5	4	2
SUB-6	69	50	42	35	27	21	15	11
SUB-7	68	49	41	33	25	19	14	10
SUB-8	17	12	10	8	6	5	4	2
SUB-9	32	23	20	16	13	10	7	5
SLOUGH	151	115	99	84	69	57	46	37
SUB-10	149	104	85	67	49	36	24	15

Notes: Discharge estimates based on Bulletin 70 rainfall of 7.5 inches and 12-hour critical duration event.

A one-dimensional unsteady flow hydraulic model using the Full Equations (FEQ) computer model was developed to simulate the hydraulics in Dead Creek for the 1-year, 2-year, 5-year, 10-year, 25-year, 50-year, 100-year, and 500-year storms events. This section summarizes the hydraulic modeling, including the model setup, assumptions, model structure, and results under the existing conditions and proposed conditions.

The hydraulic FEQ model used the results from the HEC-1 hydrologic model discussed in Section 2 and the channel topographic information from the recent survey (April 1999) conducted for this study. The hydrographs developed by the HEC-1 model were entered into the hydraulic model for each of the 12 subbasins and were routed downstream through the main channel. The FEQ model calculates the water surface elevation, velocity, and discharge in the channel for each storm event.

The hydraulic modeling analysis considered three scenarios:

- Base Condition - existing conditions including partially or completely blocked culverts
- Alternative 1 - case in which the mud/debris in the culverts are removed
- Alternative 2 - structural improvements – where the culverts and bridges are modified, through enlargement or removal, to achieve no additional increase in water surface change due to restriction of the flow at the roadway crossings. This scenario was simplified by removing all culverts and roadway embankments and replacing them with similar channels immediately upstream and downstream of the embankment.

3.1 SOURCE OF DATA FOR HYDRAULIC MODEL

The primary sources of data for developing the FEQ hydraulic model are the recent survey conducted by Zambrana Engineering, Inc. and the 1973 2-foot contour interval topographic maps from the Corps of Engineers Office in the St. Louis District. The Manning's friction coefficient values were estimated from the survey and professional experience.

3.2 HYDRAULIC MODEL STRUCTURE

The FEQ program (USGS, 1996), developed by Dr. Delbert Franz from Linsley, Kraeger Associates, Ltd. and supported by the United States Geological Survey, is a full dynamic flood-wave routing hydraulic model. FEQ is designed to take output hydrographs or time series flows from a hydrologic model and simulates a flood wave moving through river reaches and hydraulic

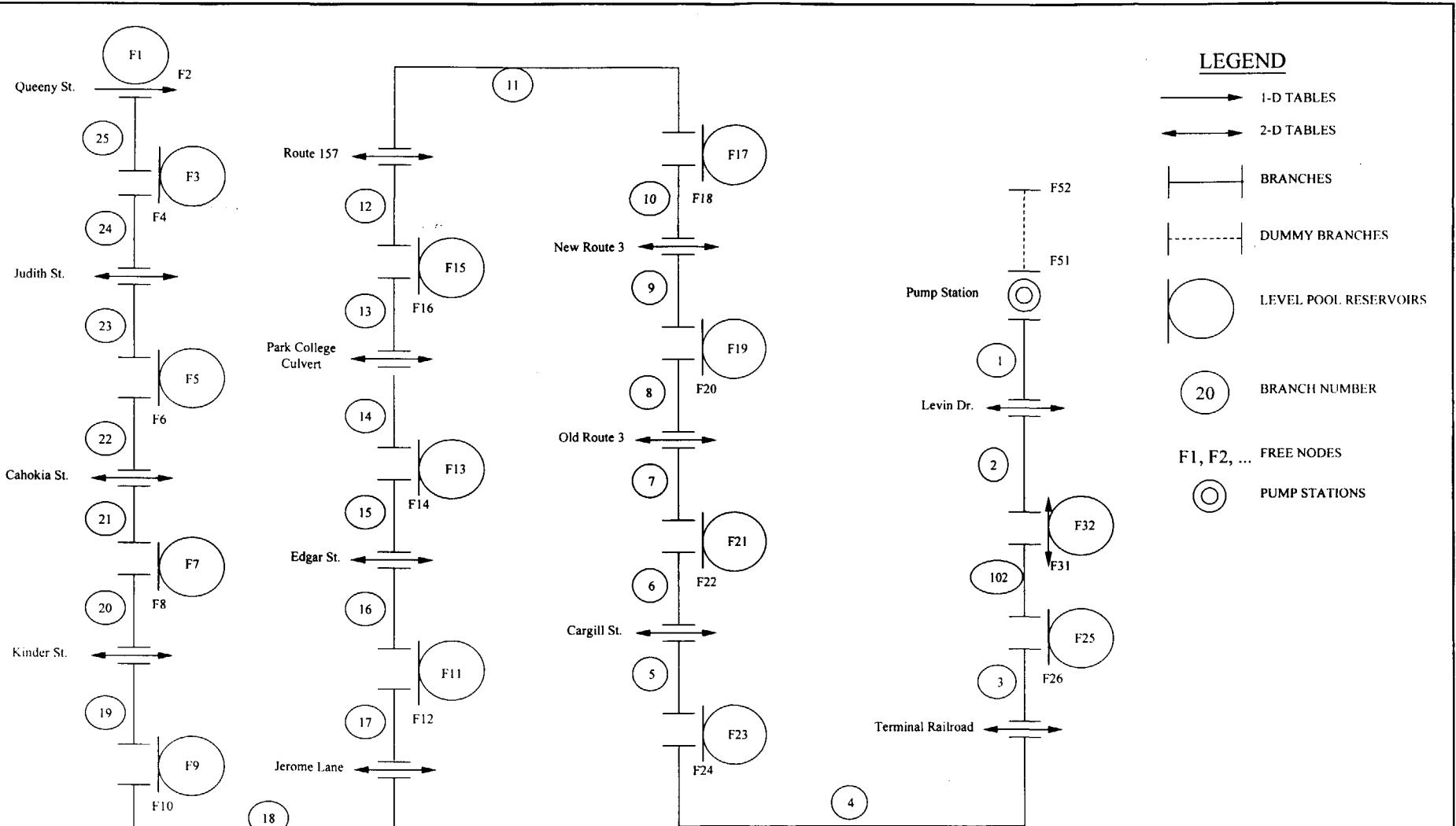
structures. The model is capable of simulating hydraulics in complicated channel networks especially when they include storage, detention, and pumping facilities.

A schematic of the Dead Creek FEQ hydraulic model is shown in Figure 2. The Dead Creek FEQ hydraulic model consists of 26 hydraulically connected branches, 30 free nodes, 12 hydraulic structures, 14 linear reservoirs and 1 side-channel reservoir to represent the partially-wooded Cahokia Slough between the Terminal Railroad and Levin Drive. The branches are represented by two or more 1-dimensional (1D) tables that relate the channel conveyance and momentum correction coefficient to the water level at the cross sections within the branch. The hydraulic structures are normally represented by 2-dimensional (2D) flow tables that calculate the flow through the hydraulic structures. This allows the FEQ program to estimate the head loss depending on upstream and downstream water surface elevations. The reservoirs are represented by two 1D tables, one to represent the storage-elevation rating curve, and one to represent the outflow rating curve from the reservoir. The 1D table is used when there is a unique relationship between two variables. The cross sectional 1D tables and the structural 2D flow tables are computed separately by a utility program associated with FEQ, called FEQUTL (USGS, 1997). The branches and structures are then connected hydraulically to establish a matrix of linear equations to solve for water surface elevations and flow rates. A complete list of the cross section 1D tables FEQUTL inputs is given in Appendix B and a complete list of the structure 2D tables FEQUTL inputs is given in Appendix C. The 1D tables for the linear reservoirs are given in Appendix D. The downstream boundary condition of the model is the discharge from the Cahokia pump station that is simulated to vary as the water level rises.

The 14 linear reservoirs are input points for the simulated runoff hydrographs associated with that section of the channel and do not necessarily represent physical reservoirs at the site. The linear reservoirs can be used as buffers to decrease the peak flow from overland flow hydrographs if the magnitudes of the peaks are unrealistic, or can be used to approximate the ponding in out-of-bank regions. The side-channel reservoir simulates flow going in and out of the Cahokia Slough as the water level in the creek rises and falls.

The cross sections used in the model branches are the cross sections produced from the April 1999 survey conducted for this study. The 2-foot topographic maps from the District Engineers Office were used to extend the cross sections where necessary.

The Manning's friction coefficients used to calculate the hydraulic conveyance through a cross section were estimated according to the characteristics of the channel and by professional experience. For this analysis, a Manning's n value of 0.040 to 0.060 was used for the main



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Date: 6/8/99

FIG. 2
DEAD CREEK
FEQ MODEL SCHEMATIC

portion of the channel, a value of 0.095 was used for the overbank areas with significant vegetation and a value of between 0.04 to 0.05 was used for some open space in out-of-bank areas. A detailed description of the Manning's n values is provided in the cross-sectional 1D tables FEQUTL inputs in Appendix B.

Operation of Cahokia Pump Station was simulated by the variable head pumping sub-routine in the FEQ model. According to Metro East Sewer District (MESD), the pump station is activated manually. There is no gauge in the pump station to electronically activate the pumping. MESD follows the Corps of Engineers operating procedures for turning the pump station on and off. According to operating procedures, the pump is turned on when the Mississippi River Stage reads 20 feet at the Market Street gauge. The pump station is also activated when Prairie du Pont Creek floods back up into the station before gauge reads 20 ft (399.94 ft MSL). Observations made by MESD indicate that the pump station does not start pumping until a river stage reading of 22 feet is reached in the Mississippi River.

Without knowing when the pump would be activated during a storm event in Dead Creek, it was assumed for this study that the culvert through the levee from Dead Creek to Prairie du Pont Creek is always closed during a storm. This would force the pump to be activated during a storm event. For this analysis, it is assumed that the pump starts pumping at its maximum capacity when the water level at the station reaches 397 ft MSL and the pump stops when the water level recedes to 396.5 ft. MSL. **The maximum pumping rate at the Cahokia pump station is 41,100 gallons per minute (or 91.2 cfs).**

A list of the FEQ model input for the 100-Year Storm Event for the three scenarios considered in this study is given in Appendix E.

3.3 MODELING RESULTS

A rigorous calibration effort using high water marks was not undertaken because such data for calibration are not available at this time. The simulated maximum water levels for existing conditions are given in Table 3.

TABLE 3
Calculated Maximum Water Levels for the 100-yr Storm Event
Under Existing Conditions

Location	FEQ Simulated Max. Water Level
Levin Dr.	398.37
Terminal R.R.	402.57
Cargill Elevator Rd.	404.38
Illinois Route 3	405.50
Illinois Route 157	406.19
Parks College Culvert	406.21
Edgar St.	406.23
Jerome Lane	406.23
Kinder Lane	406.23
Cahokia St.	406.24
Judith St.	406.63

3.4 SIMULATION RESULTS

The modeling results indicate that under the existing conditions, flood levels of the 100-year frequency storm will overtop the banks in most of the reach upstream of the Terminal Railroad/Cargill Elevator Rd. The road crossings at Route 3 and Edgar St. will be overtopped from the 100-year storm. The modeling results also indicate that overbank flooding is not likely to occur along Dead Creek for storm events smaller than the 2-year frequency storm.

Due to the flat topography in the watershed, there are depressions on both sides of the creek where significant amounts of runoff could pond before draining into the creek. As such, ponding behind the banks is likely to occur on both sides of the creek upstream of Edgar St., especially between Jerome Ln. and Judith St. On the east side of the creek at Kinder St. and Cahokia St., a large portion of the residential area is below the bank elevation and thus is subject to ponding directly from rainfall before overbank flooding occurs.

The simulated maximum water surface profiles for the three scenarios for the 100-year event are illustrated in Figures 3 and 4 (Figure 3 depicts existing and Alternative 1; Figure 4 depicts existing conditions and Alternative 2). The simulation results for all the frequency storm events

are given in Tables 4 to 11. These tables show that a less than 0.5 foot decline in the maximum water surface elevation could be achieved in the upper watershed for a 100-year flood from cleaning out the debris/sediment in the culverts (Alternative 1). However, the maximum decrease in the upper watershed for all floods considered was approximately 1.7 feet. The results also show that a maximum decline of 2.7 feet in maximum water surface elevation could be achieved for a 100-year flood through culvert enlargement or removal to achieve no additional head loss through the culverts (Alternative 2). However, the maximum decrease for all floods considered was approximately 3.1 feet.

The modeling results of Alternative 2 also suggest that bringing the culverts up to current design standards is not likely to completely solve the overbank flooding problem, particularly for large storm events. For instance, the predicted 100-year flood level in the creek upstream of Cahokia St. is above 404.56 ft, which would overtop the bank elevations in the area. Further analyses including a detailed survey of the overbank elevations and refined hydraulic modeling are needed to support this observation.

3.5 LIMITATIONS

The FEQ hydraulic model for Dead Creek presented in this report integrates the best topographic, channel geometric, structural and other hydraulic data from the April 1999 survey and previous studies that were available at the time this study was initiated. However, the effects of out-of-bank ponding and flow were only approximated, i.e., it was assumed that no permanent loss in flow occurred due to out-of-bank ponding, and it was assumed that less than bank full flow was confined solely within the channel in low lying areas. In addition, the model was also developed without the usual types of data needed for extensive model calibration, e.g., no calibration data, limited topographic information, and a simplified representation of the pumping at the Cahokia pump station. The Dead Creek FEQ model presented in this study is limited in predicting the exact overbank flood levels in the creek.

Table 4
Simulated Maximum Flow and Stages for the 1-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	403.55	403.55	401.57	7.45	7.45	7.45
Judith St. (u/s)	2.701	403.55	403.55	401.56	6.28	6.28	11.05
Cahokia St. (u/s)	2.400	402.44	401.86	401.55	7.67	8.96	13.36
Kinder St. (u/s)	2.330	402.15	401.60	401.55	8.10	9.44	13.83
Jerome Lane (u/s)	2.222	401.77	401.51	401.54	8.80	10.24	14.76
Edgar St. (u/s)	2.023	401.73	401.45	401.51	9.81	11.45	17.20
Park Col. Culvert (u/s)	1.711	401.26	400.96	401.42	11.03	13.27	20.08
RT_157 (u/s)	1.472	400.32	400.39	400.76	12.95	15.47	23.21
Route 3 (u/s)	1.336	399.95	400.02	400.39	13.57	16.06	23.86
Old Route 3 (u/s)	1.334	399.87	399.99	400.39	13.59	16.08	23.88
Cargill Elevator Rd. (u/s)	1.213	399.16	399.30	399.67	14.10	16.59	24.38
Terminal Railroad (u/s)	1.191	399.10	399.23	399.66	15.21	17.53	25.44
Levin Rd. (u/s)	0.065	397.01	397.02	398.03	87.15	87.84	100.19
Pump Station	0.000	397.08	397.11	398.05	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

Table 5
Simulated Maximum Flow and Stages for the 2-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	404.07	404.07	402.02	8.87	8.87	8.87
Judith St. (u/s)	2.701	404.07	404.07	402.02	11.09	10.84	15.03
Cahokia St. (u/s)	2.400	403.87	403.20	402.00	10.61	13.70	19.54
Kinder St. (u/s)	2.330	403.34	402.58	402.00	10.78	14.11	20.14
Jerome Lane (u/s)	2.222	402.67	402.38	401.99	11.60	15.07	21.63
Edgar St. (u/s)	2.023	402.64	402.33	401.96	12.49	16.01	24.66
Park Col. Culvert (u/s)	1.711	401.91	401.44	401.85	14.37	18.44	28.89
RT_157 (u/s)	1.472	400.59	400.71	401.17	17.36	21.55	33.44
Route 3 (u/s)	1.336	400.20	400.34	400.79	18.09	22.25	34.24
Old Route 3 (u/s)	1.334	400.11	400.30	400.80	18.12	22.27	34.27
Cargill Elevator Rd. (u/s)	1.213	399.48	399.69	400.10	18.63	22.78	34.77
Terminal Railroad (u/s)	1.191	399.40	399.58	400.07	20.32	24.30	36.45
Levin Rd. (u/s)	0.065	397.02	397.04	398.04	93.90	97.44	100.50
Pump Station	0.000	397.09	397.14	398.12	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

Table 6
Simulated Maximum Flow and Stages for the 5-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	404.77	404.70	402.55	8.88	8.88	8.88
Judith St. (u/s)	2.701	404.77	404.70	402.54	14.04	15.02	18.29
Cahokia St. (u/s)	2.400	404.20	404.09	402.53	22.58	21.67	27.84
Kinder St. (u/s)	2.330	404.19	404.03	402.52	23.22	21.41	28.74
Jerome Lane (u/s)	2.222	404.19	403.78	402.52	21.82	21.78	30.77
Edgar St. (u/s)	2.023	404.08	403.71	402.49	23.16	21.76	35.11
Park Col. Culvert (u/s)	1.711	403.79	402.11	402.36	22.26	25.22	41.26
RT_157 (u/s)	1.472	400.99	401.08	401.63	25.16	29.09	47.69
Route 3 (u/s)	1.336	400.58	400.71	401.25	25.75	30.05	48.76
Old Route 3 (u/s)	1.334	400.47	400.66	401.25	25.77	30.07	48.79
Cargill Elevator Rd. (u/s)	1.213	399.87	400.12	400.53	26.28	30.59	49.30
Terminal Railroad (u/s)	1.191	399.73	399.94	400.50	27.03	32.48	51.17
Levin Rd. (u/s)	0.065	397.05	397.10	398.14	95.13	106.74	98.30
Pump Station	0.000	397.13	397.20	398.16	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

Table 7
Simulated Maximum Flow and Stages for the 10-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	405.43	405.29	403.02	8.88	8.88	8.88
Judith St. (u/s)	2.701	405.43	405.29	403.01	15.37	16.23	20.76
Cahokia St. (u/s)	2.400	404.81	404.33	403.00	28.07	29.30	35.39
Kinder St. (u/s)	2.330	404.81	404.33	403.00	32.14	31.80	36.73
Jerome Lane (u/s)	2.222	404.81	404.33	402.99	30.39	32.13	39.83
Edgar St. (u/s)	2.023	404.63	404.18	402.96	36.35	36.47	46.48
Park Col. Culvert (u/s)	1.711	404.62	403.73	402.81	32.78	38.87	54.82
RT_157 (u/s)	1.472	401.61	401.77	402.06	37.77	44.74	63.45
Route 3 (u/s)	1.336	401.21	401.41	401.68	38.43	45.56	64.81
Old Route 3 (u/s)	1.334	401.05	401.34	401.68	38.45	45.59	64.84
Cargill Elevator Rd. (u/s)	1.213	400.56	400.88	400.93	38.95	46.09	65.34
Terminal Railroad (u/s)	1.191	400.29	400.51	400.90	39.92	47.33	67.79
Levin Rd. (u/s)	0.065	397.10	397.14	398.13	99.45	107.58	100.09
Pump Station	0.000	397.19	397.24	398.16	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

Table 8
Simulated Maximum Flow and Stages for the 25-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	406.37	406.20	403.60	8.88	8.88	8.88
Judith St. (u/s)	2.701	406.37	406.20	403.60	16.44	17.65	26.26
Cahokia St. (u/s)	2.400	405.28	404.96	403.59	34.26	38.06	45.53
Kinder St. (u/s)	2.330	405.28	404.96	403.58	38.83	43.35	50.21
Jerome Lane (u/s)	2.222	405.28	404.95	403.57	39.48	46.89	53.67
Edgar St. (u/s)	2.023	405.00	404.73	403.54	51.75	59.13	64.79
Park Col. Culvert (u/s)	1.711	404.97	404.70	403.38	54.39	54.88	75.15
RT_157 (u/s)	1.472	403.21	402.74	402.58	63.54	64.62	86.98
Route 3 (u/s)	1.336	402.83	402.47	402.23	64.15	65.55	88.73
Old Route 3 (u/s)	1.334	402.39	402.32	402.22	64.17	65.57	88.75
Cargill Elevator Rd. (u/s)	1.213	402.07	401.99	401.43	64.65	66.07	89.24
Terminal Railroad (u/s)	1.191	401.28	401.21	401.39	66.37	67.90	92.31
Levin Rd. (u/s)	0.065	397.32	397.29	398.63	103.82	112.06	100.10
Pump Station	0.000	397.40	397.39	398.59	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

Table 9
Simulated Maximum Flow and Stages for the 50-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	406.58	406.57	404.13	8.88	8.88	8.88
Judith St. (u/s)	2.701	406.58	406.57	404.12	36.26	35.48	33.28
Cahokia St. (u/s)	2.400	405.55	405.45	404.11	66.02	60.75	60.92
Kinder St. (u/s)	2.330	405.55	405.45	404.10	72.58	66.38	67.48
Jerome Lane (u/s)	2.222	405.54	405.44	404.09	77.67	70.62	71.62
Edgar St. (u/s)	2.023	405.45	405.19	404.06	85.00	78.30	84.48
Park Col. Culvert (u/s)	1.711	405.41	405.13	403.89	94.76	89.60	97.02
RT_157 (u/s)	1.472	405.31	404.61	403.05	91.37	95.95	111.23
Route 3 (u/s)	1.336	404.74	404.40	402.71	87.63	94.35	113.46
Old Route 3 (u/s)	1.334	403.93	404.04	402.70	87.65	94.35	113.48
Cargill Elevator Rd. (u/s)	1.213	403.66	403.82	401.87	88.17	94.54	113.98
Terminal Railroad (u/s)	1.191	402.18	402.19	401.82	90.55	96.98	117.81
Levin Rd. (u/s)	0.065	397.58	397.74	399.48	103.75	110.89	93.84
Pump Station	0.000	397.40	397.60	399.47	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

Table 10
Simulated Maximum Flow and Stages for the 100-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	406.63	406.63	404.59	8.88	8.88	8.88
Judith St. (u/s)	2.701	406.63	406.62	404.59	52.15	51.54	40.23
Cahokia St. (u/s)	2.400	406.24	405.85	404.58	91.47	90.13	76.58
Kinder St. (u/s)	2.330	406.23	405.85	404.57	102.42	100.30	84.61
Jerome Lane (u/s)	2.222	406.23	405.85	404.56	107.53	105.59	89.35
Edgar St. (u/s)	2.023	406.23	405.83	404.52	113.34	113.36	105.00
Park Col. Culvert (u/s)	1.711	406.21	405.80	404.34	115.39	118.77	120.08
RT_157 (u/s)	1.472	406.19	405.74	403.49	100.21	114.74	137.33
Route 3 (u/s)	1.336	405.50	405.53	403.17	96.76	108.39	140.02
Old Route 3 (u/s)	1.334	404.65	405.11	403.15	96.78	108.41	140.05
Cargill Elevator Rd. (u/s)	1.213	404.38	404.90	402.30	97.29	108.76	140.56
Terminal Railroad (u/s)	1.191	402.57	402.74	402.24	100.23	112.18	145.75
Levin Rd. (u/s)	0.065	398.37	398.77	400.30	96.56	98.20	100.14
Pump Station	0.000	398.26	398.69	400.29	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

Table 11
Simulated Maximum Flow and Stages for the 500-Year Storm Event

AT STRUCTURE	STATION (miles)	Simulated Maximum Water Levels, ft			Simulated Maximum Flow, cfs		
		Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts	Existing Conditions	Culverts Cleaned Out	No Head Loss at Culverts
Queeny St. (d/s*)	3.061	407.47	407.18	405.46	8.88	8.88	8.88
Judith St. (u/s)	2.701	407.47	407.18	405.45	79.86	79.50	56.48
Cahokia St. (u/s)	2.400	407.47	407.18	405.44	124.39	125.01	108.59
Kinder St. (u/s)	2.330	407.47	407.18	405.43	145.35	145.86	119.85
Jerome Lane (u/s)	2.222	407.47	407.18	405.42	150.65	151.66	127.56
Edgar St. (u/s)	2.023	407.46	407.18	405.38	152.73	154.00	152.98
Park Col. Culvert (u/s)	1.711	407.45	407.16	405.17	138.11	145.30	174.94
RT_157 (u/s)	1.472	407.45	407.15	404.38	117.31	129.37	199.56
Route 3 (u/s)	1.336	406.42	406.85	404.11	118.45	129.62	203.27
Old Route 3 (u/s)	1.334	406.33	406.77	404.08	118.47	129.63	203.29
Cargill Elevator Rd. (u/s)	1.213	406.28	406.72	403.18	118.74	129.58	203.65
Terminal Railroad (u/s)	1.191	403.54	403.62	403.11	122.25	133.96	213.24
Levin Rd. (u/s)	0.065	400.74	401.03	402.12	98.13	93.77	99.89
Pump Station	0.000	400.70	401.00	402.12	91.00	91.00	91.00

*) u/s - 1st survey cross section upstream of the structure
d/s - 1st survey cross section downstream of the structure

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Appendix A



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Appendix A
HEC-1 Output for 100-Yr., 12-Hr Storm

FLOOD HYDROGRAPH PACKAGE (HEC-1)
 JUN 09 1992
 VERSION 4.0.3E
 RUN DATE 06/15/99 TIME 13:17:15

U.S. ARMY CORPS OF ENGINEERS
 HYDROLOGIC ENGINEERING CENTER
 609 SECOND STREET
 DAVIS, CALIFORNIA 95616
 (916) 551-1748

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      X   X   XXXXXXXX   XXXXX      X
      X   X   X       X   X      XX
      X   X   X       X           X
  XXXXXXXX   XXXX   X       XXXXX   X
      X   X   X       X           X
      X   X   X       X   X      X
      X   X   XXXXXXXX   XXXXX      XXX
  
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
 THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
 DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1	ID 100-YR, 12 HR STORM EVENT
2	ID DEAD CREEK
3	ID HUFF DISTRIBUTION
4	ID IINR SWS CR 258 UNIT HYDROGRAPHS
5	IT 10 270
6	IO 5
7	KK SUB1
8	KO 1
9	BA .11
10	PB 7.5
11	IN 30
12	PC 0 .024 .05 .08 .108 .134 .16 .19 .22 .25
13	PC .29 .34 .39 .45 .52 .62 .71 .80 .85 .88
14	PC .91 .936 .958 .98 1
15	LS 0 90 0
16	UI 0.0 3.4 6.9 12.4 18.7 25.4 28.7 28.5 26.9 24.3
17	UI 19.9 18.0 16.3 14.8 13.6 12.6 11.7 10.9 10.1 9.4
18	UI 8.7 8.0 7.5 6.7 6.1 5.6 5.2 4.8 4.5 4.1
19	UI 3.8 3.5 3.2 2.9 2.6 2.4 2.1 1.8 1.6 1.3
20	UI 1.1 0.8 0.6 0.4 0.1
21	KK SUB2
22	KO 1
23	BA .13
24	LS 0 83 0
25	UI 0.0 5.2 10.6 20.2 31.6 39.9 41.4 39.0 31.1 27.3
26	UI 24.1 21.2 19.1 17.2 15.6 14.1 12.7 11.5 10.4 8.9
27	UI 8.0 7.3 6.7 6.1 5.5 5.0 4.5 4.0 3.5 3.0
28	UI 2.6 2.2 1.7 1.3 0.9 0.5 0.2
29	KK JUDITH ST
30	HC 2
31	KK SUB3
32	KO 1
33	BA .16
34	LS 0 81 C
35	UI 0.0 1.5 2.9 4.4 6.4 8.7 11.2 13.8 16.7 18.7
36	UI 19.5 19.5 19.2 18.7 18.0 17.1 14.5 13.8 13.2 12.6
37	UI 12.0 11.5 10.9 10.4 10.0 9.6 9.3 9.0 8.7 8.4
38	UI 8.1 7.8 7.6 7.3 7.1 6.8 6.6 6.4 6.2 6.0
39	UI 5.8 5.6 5.4 5.2 5.0 4.8 4.6 4.4 4.2 4.0
40	UI 3.9 3.7 3.6 3.4 3.3 3.2 3.0 2.9 2.8 2.7
41	UI 2.6 2.4 2.3 2.2 2.1 2.0 1.9 1.8 1.7 1.6
42	UI 1.5 1.4 1.3 1.2 1.1 1.0 0.9 0.8 0.7 0.6
43	UI 0.5 0.4 0.3 0.2 0.1
44	KK CAH ST
45	HC 2

1 HEC-1 INPUT PAGE 2

LINE	ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
46	KK SUB4
47	KO 1
48	BA .06
49	LS 0 81 C
50	UI 0.0 5.5 15.3 24.6 23.7 16.7 12.8 10.4 8.5 6.9
51	UI 5.4 4.4 3.7 3.1 2.6 2.1 1.6 1.1 0.7 0.3
52	KK KINDER ST

53 HC 2
 54 KK SUB5
 55 KO 1
 56 BA .04
 57 LS 0 81 0
 58 UI 0.0 0.7 1.4 2.4 3.4 4.6 5.4 5.5 5.3 5.0
 59 UI 4.6 3.9 3.6 3.4 3.2 3.0 2.8 2.7 2.6 2.4
 60 UI 2.3 2.2 2.1 2.1 2.0 1.9 1.8 1.7 1.6 1.6
 61 UI 1.5 1.4 1.4 1.3 1.2 1.1 1.1 1.0 1.0 0.9
 62 UI 0.9 0.8 0.8 0.7 0.7 0.6 0.6 0.5 0.5 0.4
 63 UI 0.4 0.3 0.3 0.3 0.2 0.2 0.1 0.1 0.1 0.0

 64 KK JEROME ST
 65 HC 2

 66 KK SUB6
 67 KO 1
 68 BA .09
 69 LS 0 85 0
 70 UI 0.0 4.1 9.2 16.8 24.8 27.7 26.4 23.0 18.1 15.7
 71 UI 13.7 12.3 11.0 9.8 8.8 7.9 7.1 6.0 5.4 4.9
 72 UI 4.4 3.9 3.5 3.1 2.8 2.4 2.1 1.8 1.4 1.1
 73 UI 0.8 0.5 0.2

 74 KK EDGAR ST
 75 HC 2

 76 KK SUB7
 77 KO 1
 78 BA .12
 79 LS 0 85 0
 80 UI 0.0 1.0 2.0 3.0 4.2 5.7 7.2 8.8 10.4 12.3
 81 UI 13.6 14.2 14.2 14.0 13.8 13.5 13.0 12.5 10.7 10.3
 82 UI 9.9 9.6 9.2 8.9 8.6 8.3 8.0 7.7 7.5 7.2
 83 UI 7.0 6.8 6.7 6.5 6.3 6.2 6.0 5.9 5.7 5.6
 84 UI 5.5 5.3 5.2 5.1 4.9 4.8 4.7 4.6 4.5 4.4
 85 UI 4.3 4.2 4.1 4.0 3.9 3.8 3.7 3.6 3.4 3.3
 86 UI 3.2 3.1 3.0 2.9 2.8 2.7 2.7 2.6 2.5 2.4
 87 UI 2.3 2.3 2.2 2.1 2.0 2.0 1.9 1.8 1.8 1.7
 88 UI 1.6 1.5 1.5 1.4 1.3 1.3 1.2 1.1 1.1 1.0
 89 UI 0.9 0.9 0.8 0.8 0.7 0.6 0.6 0.5 0.4 0.4
 90 UI 0.3 0.3 0.2 0.1 0.1 0.0

HBC-1 INPUT

PAGE 3

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

91 KK RTE157
 92 HC 2

 93 KK SUB8
 94 KO 1
 95 BA .02
 96 LS 0 82 0
 97 UI 0.0 2.7 7.8 10.2 8.5 6.2 5.0 4.3 3.7 3.1
 98 UI 2.7 2.2 1.8 1.6 1.3 1.1 0.8 0.6 0.4 0.2
 99 UI 0.1

 100 KK RTE 3
 101 HC 2

 102 KK SUB9
 103 KO 1
 104 BA .03
 105 LS 0 85 0
 106 UI 0.0 4.7 13.5 19.2 16.8 11.9 9.4 7.9 6.6 5.6
 107 UI 4.5 3.7 3.1 2.6 2.2 1.8 1.4 1.0 0.6 0.3

 108 KK TERMRR RD
 109 HC 2

 110 KK BORROW
 111 KO 1
 112 BA .13
 113 LS 0 100 0
 114 UI 0.0 6.5 13.1 25.1 37.7 49.0 51.5 49.1 44.1 35.0
 115 UI 30.8 27.1 24.3 22.1 20.0 18.2 16.5 15.0 13.6 11.9
 116 UI 10.6 9.7 8.8 8.1 7.3 6.7 6.0 5.4 4.8 4.3
 117 UI 3.7 3.2 2.7 2.2 1.7 1.2 0.7 0.2

 118 KK SUB10
 119 KO 1
 120 BA .17
 121 LS 0 76 0
 122 UI 0.0 5.4 10.7 18.5 28.2 38.9 48.5 51.6 50.6 47.8
 123 UI 43.5 35.6 32.3 29.4 26.7 24.6 22.8 21.2 19.6 18.2
 124 UI 16.9 15.7 14.6 13.5 12.2 11.1 10.3 9.5 8.9 8.3
 125 UI 7.7 7.1 6.6 6.1 5.6 5.1 4.7 4.2 3.8 3.3
 126 UI 2.9 2.5 2.1 1.7 1.3 0.9 0.5 0.1

127 KK SUBL+B
 128 HC 2

 129 KK LEVIN RD
 130 HC 2
 131 ZZ

 * FLOOD HYDROGRAPH PACKAGE (HEC-1) * U.S. ARMY CORPS OF ENGINEERS *
 * JUN 09 1992 * HYDROLOGIC ENGINEERING CENTER *

• VERSION 4.0.3E
• RUN DATE 06/15/99 TIME 13:17:15
•

• 609 SECOND STREET
• DAVIS, CALIFORNIA 95616
• (916) 551-1748
•

100-YR, 12 HR STORM EVENT
DEAD CREEK
HUFF DISTRIBUTION
IINR SWS CR 258 UNIT HYDROGRAPHS

6 IO OUTPUT CONTROL VARIABLES

IPRNT 5 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

MMIN 10 MINUTES IN COMPUTATION INTERVAL
IDATE 1 0 STARTING DATE
ITIME 0000 STARTING TIME
NQ 270 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 2 0 ENDING DATE
NDTIME 2050 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.17 HOURS
TOTAL TIME BASE 44.83 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

7 KK SUB1

8 KO OUTPUT CONTROL VARIABLES

IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

11 IN TIME DATA FOR INPUT TIME SERIES

JXMIN 30 TIME INTERVAL IN MINUTES
JXDATE 1 0 STARTING DATE
JXTIME 0 STARTING TIME

SUBBASIN RUNOFF DATA

9 BA SUBBASIN CHARACTERISTICS

TAREA 0.11 SUBBASIN AREA

PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI INCREMENTAL PRECIPITATION PATTERN

0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01								

15 LS SCS LOSS RATE

STRTL 0.22 INITIAL ABSTRACTION
CRVNBR 90.00 CURVE NUMBER
RTIMP 0.00 PERCENT IMPERVIOUS AREA

16 UI INPUT UNITGRAPH, 45 ORDINATES, VOLUME = 0.94

0.0	3.4	6.9	12.4	18.7	25.4	28.7	28.5	26.9	24.3
19.9	18.0	16.3	14.8	13.6	12.6	11.7	10.9	10.1	9.4
8.7	8.0	7.5	6.7	6.1	5.6	5.2	4.8	4.5	4.1
3.8	3.5	3.2	2.9	2.6	2.4	2.1	1.8	1.6	1.3
1.1	0.8	0.6	0.4	0.1					

HYDROGRAPH AT STATION SUB1

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	0000	1	0.00	0.00	0.00	0.	*	*	1	2230	136	0.00	0.00	0.00	0.00	0.	
1	0010	2	0.06	0.06	0.00	0.	*	*	1	2240	137	0.00	0.00	0.00	0.00	0.	
1	0020	3	0.06	0.06	0.00	0.	*	*	1	2250	138	0.00	0.00	0.00	0.00	0.	
1	0030	4	0.06	0.06	0.00	0.	*	*	1	2300	139	0.00	0.00	0.00	0.00	0.	
1	0040	5	0.07	0.06	0.00	0.	*	*	1	2310	140	0.00	0.00	0.00	0.00	0.	
1	0050	6	0.07	0.06	0.01	0.	*	*	1	2320	141	0.00	0.00	0.00	0.00	0.	
1	0100	7	0.06	0.05	0.01	0.	*	*	1	2330	142	0.00	0.00	0.00	0.00	0.	
1	0110	8	0.07	0.05	0.02	0.	*	*	1	2340	143	0.00	0.00	0.00	0.00	0.	
1	0120	9	0.08	0.05	0.03	0.	*	*	1	2350	144	0.00	0.00	0.00	0.00	0.	
1	0130	10	0.07	0.04	0.03	1.	*	*	2	0000	145	0.00	0.00	0.00	0.00	0.	
1	0140	11	0.07	0.04	0.03	1.	*	*	2	0010	146	0.00	0.00	0.00	0.00	0.	
1	0150	12	0.07	0.03	0.04	2.	*	*	2	0020	147	0.00	0.00	0.00	0.00	0.	
1	0200	13	0.07	0.03	0.04	2.	*	*	2	0030	148	0.00	0.00	0.00	0.00	0.	
1	0210	14	0.06	0.03	0.04	3.	*	*	2	0040	149	0.00	0.00	0.00	0.00	0.	
1	0220	15	0.07	0.02	0.04	4.	*	*	2	0050	150	0.00	0.00	0.00	0.00	0.	
1	0230	16	0.06	0.02	0.04	5.	*	*	2	0100	151	0.00	0.00	0.00	0.00	0.	
1	0240	17	0.06	0.02	0.04	6.	*	*	2	0110	152	0.00	0.00	0.00	0.00	0.	
1	0250	18	0.06	0.02	0.04	7.	*	*	2	0120	153	0.00	0.00	0.00	0.00	0.	
1	0300	19	0.06	0.02	0.05	8.	*	*	2	0130	154	0.00	0.00	0.00	0.00	0.	
1	0310	20	0.08	0.02	0.05	8.	*	*	2	0140	155	0.00	0.00	0.00	0.00	0.	
1	0320	21	0.07	0.02	0.06	9.	*	*	2	0150	156	0.00	0.00	0.00	0.00	0.	
1	0330	22	0.08	0.02	0.06	10.	*	*	2	0200	157	0.00	0.00	0.00	0.00	0.	
1	0340	23	0.08	0.02	0.06	11.	*	*	2	0210	158	0.00	0.00	0.00	0.00	0.	
1	0350	24	0.07	0.02	0.06	12.	*	*	2	0220	159	0.00	0.00	0.00	0.00	0.	
1	0400	25	0.08	0.01	0.06	13.	*	*	2	0230	160	0.00	0.00	0.00	0.00	0.	
1	0410	26	0.08	0.01	0.06	14.	*	*	2	0240	161	0.00	0.00	0.00	0.00	0.	
1	0420	27	0.07	0.01	0.06	15.	*	*	2	0250	162	0.00	0.00	0.00	0.00	0.	
1	0430	28	0.08	0.01	0.06	15.	*	*	2	0300	163	0.00	0.00	0.00	0.00	0.	
1	0440	29	0.10	0.02	0.08	16.	*	*	2	0310	164	0.00	0.00	0.00	0.00	0.	
1	0450	30	0.10	0.01	0.09	17.	*	*	2	0320	165	0.00	0.00	0.00	0.00	0.	
1	0500	31	0.10	0.01	0.09	18.	*	*	2	0330	166	0.00	0.00	0.00	0.00	0.	
1	0510	32	0.13	0.02	0.11	19.	*	*	2	0340	167	0.00	0.00	0.00	0.00	0.	
1	0520	33	0.12	0.01	0.11	20.	*	*	2	0350	168	0.00	0.00	0.00	0.00	0.	
1	0530	34	0.13	0.01	0.11	21.	*	*	2	0400	169	0.00	0.00	0.00	0.00	0.	
1	0540	35	0.12	0.01	0.11	23.	*	*	2	0410	170	0.00	0.00	0.00	0.00	0.	
1	0550	36	0.13	0.01	0.11	24.	*	*	2	0420	171	0.00	0.00	0.00	0.00	0.	
1	0600	37	0.12	0.01	0.11	26.	*	*	2	0430	172	0.00	0.00	0.00	0.00	0.	
1	0610	38	0.15	0.01	0.14	28.	*	*	2	0440	173	0.00	0.00	0.00	0.00	0.	
1	0620	39	0.15	0.01	0.14	30.	*	*	2	0450	174	0.00	0.00	0.00	0.00	0.	
1	0630	40	0.15	0.01	0.14	31.	*	*	2	0500	175	0.00	0.00	0.00	0.00	0.	
1	0640	41	0.18	0.01	0.16	33.	*	*	2	0510	176	0.00	0.00	0.00	0.00	0.	
1	0650	42	0.17	0.01	0.16	35.	*	*	2	0520	177	0.00	0.00	0.00	0.00	0.	
1	0700	43	0.18	0.01	0.17	37.	*	*	2	0530	178	0.00	0.00	0.00	0.00	0.	
1	0710	44	0.25	0.01	0.24	39.	*	*	2	0540	179	0.00	0.00	0.00	0.00	0.	
1	0720	45	0.25	0.01	0.24	41.	*	*	2	0550	180	0.00	0.00	0.00	0.00	0.	
1	0730	46	0.25	0.01	0.24	44.	*	*	2	0600	181	0.00	0.00	0.00	0.00	0.	
1	0740	47	0.22	0.01	0.22	47.	*	*	2	0610	182	0.00	0.00	0.00	0.00	0.	
1	0750	48	0.23	0.01	0.22	50.	*	*	2	0620	183	0.00	0.00	0.00	0.00	0.	
1	0800	49	0.22	0.01	0.22	54.	*	*	2	0630	184	0.00	0.00	0.00	0.00	0.	
1	0810	50	0.23	0.01	0.22	57.	*	*	2	0640	185	0.00	0.00	0.00	0.00	0.	
1	0820	51	0.22	0.01	0.22	60.	*	*	2	0650	186	0.00	0.00	0.00	0.00	0.	
1	0830	52	0.23	0.01	0.22	63.	*	*	2	0700	187	0.00	0.00	0.00	0.00	0.	
1	0840	53	0.12	0.00	0.12	66.	*	*	2	0710	188	0.00	0.00	0.00	0.00	0.	
1	0850	54	0.13	0.00	0.12	67.	*	*	2	0720	189	0.00	0.00	0.00	0.00	0.	
1	0900	55	0.12	0.00	0.12	68.	*	*	2	0730	190	0.00	0.00	0.00	0.00	0.	
1	0910	56	0.07	0.00	0.07	69.	*	*	2	0740	191	0.00	0.00	0.00	0.00	0.	
1	0920	57	0.07	0.00	0.07	68.	*	*	2	0750	192	0.00	0.00	0.00	0.00	0.	
1	0930	58	0.07	0.00	0.07	67.	*	*	2	0800	193	0.00	0.00	0.00	0.00	0.	
1	0940	59	0.07	0.00	0.07	65.	*	*	2	0810	194	0.00	0.00	0.00	0.00	0.	
1	0950	60	0.08	0.00	0.07	63.	*	*	2	0820	195	0.00	0.00	0.00	0.00	0.	
1	1000	61	0.07	0.00	0.07	60.	*	*	2	0830	196	0.00	0.00	0.00	0.00	0.	
1	1010	62	0.06	0.00	0.06	57.	*	*	2	0840	197	0.00	0.00	0.00	0.00	0.	
1	1020	63	0.07	0.00	0.06	55.	*	*	2	0850	198	0.00	0.00	0.00	0.00	0.	
1	1030	64	0.06	0.00	0.06	53.	*	*	2	0900	199	0.00	0.00	0.00	0.00	0.	
1	1040	65	0.06	0.00	0.05	51.	*	*	2	0910	200	0.00	0.00	0.00	0.00	0.	
1	1050	66	0.06	0.00	0.05	49.	*	*	2	0920	201	0.00	0.00	0.00	0.00	0.	
1	1100	67	0.06	0.00	0.05	47.	*	*	2	0930	202	0.00	0.00	0.00	0.00	0.	
1	1110	68	0.06	0.00	0.05	45.	*	*	2	0940	203	0.00	0.00	0.00	0.00	0.	
1	1120	69	0.06	0.00	0.05	43.	*	*	2	0950	204	0.00	0.00	0.00	0.00	0.	
1	1130	70	0.06	0.00	0.05	42.	*	*	2	1000	205	0.00	0.00	0.00	0.00	0.	
1	1140	71	0.05	0.00	0.05	40.	*	*	2	1010	206	0.00	0.00	0.00	0.00	0.	
1	1150	72	0.05	0.00	0.05	38.	*	*	2	1020	207	0.00	0.00	0.00	0.00	0.	
1	1200	73	0.05	0.00	0.05	37.	*	*	2	1030	208	0.00	0.00	0.00	0.00	0.	
1	1210	74	0.00	0.00	0.00	36.	*	*	2	1040	209	0.00	0.00	0.00	0.00	0.	
1	1220	75	0.00	0.00	0.00	34.	*	*	2	1050	210	0.00	0.00	0.00	0.00	0.	
1	1230	76	0.00	0.00	0.00	33.	*	*	2	1100	211	0.00	0.00	0.00	0.00	0.	
1	1240	77	0.00	0.00	0.00	31.	*	*	2	1110	212	0.00	0.00	0.00	0.00	0.	
1	1250	78	0.00	0.00	0.00	29.	*	*	2	1120	213	0.00	0.00	0.00	0.00	0.	
1	1300	79	0.00	0.00	0.00	26.	*	*	2	1130	214	0.00	0.00	0.00	0.00	0.	
1	1310	80	0.00	0.00	0.00	24.	*	*	2	1140	215	0.00	0.00	0.00	0.00	0.	
1	1320	81	0.00	0.00	0.00	22.	*	*	2	1150	216	0.00	0.00	0.00	0.00	0.	
1	1330	82	0.00	0.00	0.00	20.	*	*	2	1200	217	0.00	0.00	0.00</			

1	1630	100	0.00	0.00	0.00	2.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	2.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	2.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	2.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	1.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	1.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	1.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	1.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	1.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	1.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	0.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	0.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	0.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	0.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	0.	*	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 1.19, TOTAL EXCESS = 6.31

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM FLOW			AVERAGE FLOW 44.83-HR
		6-HR	24-HR	72-HR	
69.	9.17	50. (INCHES)	18. 4.250	9. 5.958	9. 5.958
		(AC-FT)	25. 35.	35. 35.	

CUMULATIVE AREA = 0.11 SQ MI

21 KK * SUB2 *

22 KO OUTPUT CONTROL VARIABLES
 IPRNT 1 PRINT CONTROL
 IPLOT 0 PLOT CONTROL
 QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

23 BA SUBBASIN CHARACTERISTICS
TAREA 0.13 SUBBASIN AREA

PRECIPITATION DATA

1C PB STORM 7.50 BASIN TOTAL PRECIPITATION

INCREMENTAL PRECIPITATION PATTERN		
0.01	0.01	0.01
0.01	0.01	0.01
0.01	0.01	0.01
0.02	0.02	0.02
0.02	0.02	0.03
0.03	0.02	0.02
0.01	0.01	0.01
0.01	0.01	0.01

24 LS SCS LOSS RATE
 STRTL 0.41 INITIAL ABSTRACTION
 CRVNBR 83.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

25 U1 INPUT UNITGRAPH, 37 ORDINATES, VOLUME = 0.92
 0.0 5.2 10.6 20.2 31.6 39.9 41.4 39.0 31.1 27.3
 24.1 21.2 19.1 17.2 15.6 14.1 12.7 11.5 10.4 8.9
 8.0 7.3 6.7 6.1 5.5 5.0 4.5 4.0 3.5 3.0
 2.6 2.2 1.7 1.3 0.9 0.5 0.2

HYDROGRAPH AT STATION SUB2

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	.	*	1	2230	136	0.00	0.00	0.00	0.00	0.
1	0010	2	0.06	0.06	0.00	0.	.	*	1	2240	137	0.00	0.00	0.00	0.00	0.
1	0020	3	0.06	0.06	0.00	0.	.	*	1	2250	138	0.00	0.00	0.00	0.00	0.
1	0030	4	0.06	0.06	0.00	0.	.	*	1	2300	139	0.00	0.00	0.00	0.00	0.
1	0040	5	0.07	0.07	0.00	0.	.	*	1	2310	140	0.00	0.00	0.00	0.00	0.
1	0050	6	0.07	0.07	0.00	0.	.	*	1	2320	141	0.00	0.00	0.00	0.00	0.
1	0100	7	0.06	0.06	0.00	0.	.	*	1	2330	142	0.00	0.00	0.00	0.00	0.
1	0110	8	0.07	0.07	0.00	0.	.	*	1	2340	143	0.00	0.00	0.00	0.00	0.
1	0120	9	0.08	0.07	0.01	0.	.	*	1	2350	144	0.00	0.00	0.00	0.00	0.
1	0130	10	0.07	0.06	0.01	0.	.	*	2	0000	145	0.00	0.00	0.00	0.00	0.
1	0140	11	0.07	0.06	0.01	0.	.	*	2	0010	146	0.00	0.00	0.00	0.00	0.
1	0150	12	0.07	0.05	0.02	0.	.	*	2	0020	147	0.00	0.00	0.00	0.00	0.
1	0200	13	0.07	0.05	0.02	1.	.	*	2	0030	148	0.00	0.00	0.00	0.00	0.
1	0210	14	0.06	0.04	0.02	1.	.	*	2	0040	149	0.00	0.00	0.00	0.00	0.
1	0220	15	0.07	0.04	0.02	2.	.	*	2	0050	150	0.00	0.00	0.00	0.00	0.
1	0230	16	0.06	0.04	0.02	2.	.	*	2	0100	151	0.00	0.00	0.00	0.00	0.
1	0240	17	0.06	0.04	0.03	3.	.	*	2	0110	152	0.00	0.00	0.00	0.00	0.
1	0250	18	0.06	0.04	0.03	4.	.	*	2	0120	153	0.00	0.00	0.00	0.00	0.
1	0300	19	0.06	0.03	0.03	5.	.	*	2	0130	154	0.00	0.00	0.00	0.00	0.
1	0310	20	0.08	0.04	0.04	6.	.	*	2	0140	155	0.00	0.00	0.00	0.00	0.
1	0320	21	0.07	0.04	0.04	6.	.	*	2	0150	156	0.00	0.00	0.00	0.00	0.
1	0330	22	0.08	0.03	0.04	7.	.	*	2	0200	157	0.00	0.00	0.00	0.00	0.
1	0340	23	0.08	0.03	0.04	8.	.	*	2	0210	158	0.00	0.00	0.00	0.00	0.
1	0350	24	0.07	0.03	0.04	9.	.	*	2	0220	159	0.00	0.00	0.00	0.00	0.
1	0400	25	0.08	0.03	0.05	10.	.	*	2	0230	160	0.00	0.00	0.00	0.00	0.
1	0410	26	0.08	0.03	0.05	11.	.	*	2	0240	161	0.00	0.00	0.00	0.00	0.
1	0420	27	0.07	0.03	0.05	12.	.	*	2	0250	162	0.00	0.00	0.00	0.00	0.
1	0430	28	0.08	0.03	0.05	13.	.	*	2	0300	163	0.00	0.00	0.00	0.00	0.
1	0440	29	0.10	0.03	0.07	14.	.	*	2	0310	164	0.00	0.00	0.00	0.00	0.
1	0450	30	0.10	0.03	0.07	15.	.	*	2	0320	165	0.00	0.00	0.00	0.00	0.
1	0500	31	0.10	0.03	0.07	16.	.	*	2	0330	166	0.00	0.00	0.00	0.00	0.
1	0510	32	0.13	0.03	0.09	17.	.	*	2	0340	167	0.00	0.00	0.00	0.00	0.
1	0520	33	0.12	0.03	0.09	19.	.	*	2	0350	168	0.00	0.00	0.00	0.00	0.
1	0530	34	0.13	0.03	0.09	20.	.	*	2	0400	169	0.00	0.00	0.00	0.00	0.
1	0540	35	0.12	0.03	0.10	22.	.	*	2	0410	170	0.00	0.00	0.00	0.00	0.
1	0550	36	0.13	0.03	0.10	24.	.	*	2	0420	171	0.00	0.00	0.00	0.00	0.
1	0600	37	0.12	0.03	0.10	26.	.	*	2	0430	172	0.00	0.00	0.00	0.00	0.
1	0610	38	0.15	0.03	0.12	28.	.	*	2	0440	173	0.00	0.00	0.00	0.00	0.
1	0620	39	0.15	0.03	0.12	31.	.	*	2	0450	174	0.00	0.00	0.00	0.00	0.
1	0630	40	0.15	0.03	0.12	32.	.	*	2	0500	175	0.00	0.00	0.00	0.00	0.
1	0640	41	0.18	0.03	0.15	35.	.	*	2	0510	176	0.00	0.00	0.00	0.00	0.
1	0650	42	0.17	0.03	0.15	37.	.	*	2	0520	177	0.00	0.00	0.00	0.00	0.
1	0700	43	0.18	0.02	0.15	39.	.	*	2	0530	178	0.00	0.00	0.00	0.00	0.
1	0710	44	0.25	0.03	0.22	42.	.	*	2	0540	179	0.00	0.00	0.00	0.00	0.
1	0720	45	0.25	0.03	0.22	45.	.	*	2	0550	180	0.00	0.00	0.00	0.00	0.
1	0730	46	0.25	0.03	0.22	49.	.	*	2	0600	181	0.00	0.00	0.00	0.00	0.
1	0740	47	0.22	0.02	0.20	52.	.	*	2	0610	182	0.00	0.00	0.00	0.00	0.
1	0750	48	0.23	0.02	0.20	57.	.	*	2	0620	183	0.00	0.00	0.00	0.00	0.
1	0800	49	0.22	0.02	0.20	62.	.	*	2	0630	184	0.00	0.00	0.00	0.00	0.
1	0810	50	0.23	0.02	0.21	66.	.	*	2	0640	185	0.00	0.00	0.00	0.00	0.
1	0820	51	0.22	0.02	0.21	70.	.	*	2	0650	186	0.00	0.00	0.00	0.00	0.
1	0830	52	0.23	0.02	0.21	73.	.	*	2	0700	187	0.00	0.00	0.00	0.00	0.
1	0840	53	0.12	0.01	0.12	75.	.	*	2	0710	188	0.00	0.00	0.00	0.00	0.
1	0850	54	0.13	0.01	0.12	77.	.	*	2	0720	189	0.00	0.00	0.00	0.00	0.
1	0900	55	0.12	0.01	0.12	78.	.	*	2	0730	190	0.00	0.00	0.00	0.00	0.
1	0910	56	0.07	0.00	0.07	79.	.	*	2	0740	191	0.00	0.00	0.00	0.00	0.
1	0920	57	0.07	0.00	0.07	77.	.	*	2	0750	192	0.00	0.00	0.00	0.00	0.
1	0930	58	0.07	0.00	0.07	75.	.	*	2	0800	193	0.00	0.00	0.00	0.00	0.
1	0940	59	0.07	0.00	0.07	71.	.	*	2	0810	194	0.00	0.00	0.00	0.00	0.
1	0950	60	0.08	0.00	0.07	68.	.	*	2	0820	195	0.00	0.00	0.00	0.00	0.
1	1000	61	0.07	0.00	0.07	64.	.	*	2	0830	196	0.00	0.00	0.00	0.00	0.
1	1010	62	0.06	0.00	0.06	61.	.	*	2	0840	197	0.00	0.00	0.00	0.00	0.
1	1020	63	0.07	0.00	0.06	58.	.	*	2	0850	198	0.00	0.00	0.00	0.00	0.
1	1030	64	0.06	0.00	0.06	55.	.	*	2	0900	199	0.00	0.00	0.00	0.00	0.
1	1040	65	0.06	0.00	0.05	52.	.	*	2	0910	200	0.00	0.00	0.00	0.00	0.
1	1050	66	0.06	0.00	0.05	50.	.	*	2	0920	201	0.00	0.00	0.00	0.00	0.
1	1100	67	0.06	0.00	0.05	48.	.	*	2	0930	202	0.00	0.00	0.00	0.00	0.
1	1110	68	0.06	0.00	0.05	46.	.	*	2	0940	203	0.00	0.00	0.00	0.00	0.
1	1120	69	0.06	0.00	0.05	43.	.	*	2	0950	204	0.00	0.00	0.00	0.00	0.
1	1130	70	0.06	0.00	0.05	41.	.	*	2	1000	205	0.00	0.00	0.00	0.00	0.
1	1140	71	0.05	0.00	0.05	39.	.	*	2	1010	206	0.00	0.00	0.00	0.00	0.
1	1150	72	0.05	0.00	0.05	38.	.	*	2	1020	207	0.00	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	36.	.	*	2	1030	208	0.00	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	35.	.	*	2	1040	209	0.00	0.00	0.00	0.00	0.
1	1220	75	0.00	0.00	0.00	33.	.	*	2	1050	210	0.00	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	31.	.	*	2	1100	211	0.00	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	29.	.	*	2	1110	212	0.00	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	26.	.	*	2	1120	213	0.00	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	23.	.	*	2	1130	214	0.00	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	20.	.	*	2	1140	215	0.00	0.00	0.00	0.00	0.
1	1320	81	0.00	0.00	0.00	18.	.	*	2	1150	216	0.00	0.00	0.00	0.00	0.
1	1330	82	0.00	0.00	0.00	15.	.	*	2	1200	217	0.00	0.00	0.00	0.00	0.
1	1340	83	0.00													

1	1540	95	0.00	0.00	0.00	2.	*	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	2.	*	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	2.	*	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	1.	*	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	1.	*	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	1.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	1.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	1.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	0.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	0.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	0.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	0.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	0.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	0.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	0.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	0.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	0.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	0.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	0.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	0.	*	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 2.00, TOTAL EXCESS = 5.50

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			44.83-HR
		6-HR	24-HR	72-HR	
+ 79.	9.17	54.	18.	9.	9.
		(INCHES) 3.887	5.072	5.072	5.072
		(AC-FT) 27.	35.	35.	35.

CUMULATIVE AREA = 0.13 SQ MI

31 KK SUB3

32 KO OUTPUT CONTROL VARIABLES

IPRNT	1	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

33 BA SUBBASIN CHARACTERISTICS

TAREA	0.16	SUBBASIN AREA
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PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI INCREMENTAL PRECIPITATION PATTERN

0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01							

34 LS SCS LOSS RATE

STRTL	0.47	INITIAL ABSTRACTION
CRVNBR	81.00	CURVE NUMBER
RTIMP	0.00	PERCENT IMPERVIOUS AREA

35 UI INPUT UNITGRAPH, 85 ORDINATES, VOLUME = 0.86

0.0	1.5	2.9	4.4	6.4	8.7	11.2	13.8	16.7	18.7
19.5	19.5	19.2	18.7	18.0	17.1	14.5	13.8	13.2	12.6
12.0	11.5	10.9	10.4	10.0	9.6	9.3	9.0	8.7	8.4

8.1	7.8	7.6	7.3	7.1	6.8	6.6	6.4	6.2	6.0
5.8	5.6	5.4	5.2	5.0	4.8	4.6	4.4	4.2	4.0
3.9	3.7	3.6	3.4	3.3	3.2	3.0	2.9	2.8	2.7
2.6	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6
1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6
0.5	0.4	0.3	0.2	0.1					

HYDROGRAPH AT STATION SUB3

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	0.	*	1	2230	136	0.00	0.00	0.00	0.	1.
1	0010	2	0.06	0.06	0.00	0.	0.	*	1	2240	137	0.00	0.00	0.00	0.	1.
1	0020	3	0.06	0.06	0.00	0.	0.	*	1	2250	138	0.00	0.00	0.00	0.	1.
1	0030	4	0.06	0.06	0.00	0.	0.	*	1	2300	139	0.00	0.00	0.00	0.	1.
1	0040	5	0.07	0.07	0.00	0.	0.	*	1	2310	140	0.00	0.00	0.00	0.	1.
1	0050	6	0.07	0.07	0.00	0.	0.	*	1	2320	141	0.00	0.00	0.00	0.	1.
1	0100	7	0.06	0.06	0.00	0.	0.	*	1	2330	142	0.00	0.00	0.00	0.	1.
1	0110	8	0.07	0.07	0.00	0.	0.	*	1	2340	143	0.00	0.00	0.00	0.	1.
1	0120	9	0.08	0.07	0.00	0.	0.	*	1	2350	144	0.00	0.00	0.00	0.	1.
1	0130	10	0.07	0.07	0.01	0.	0.	*	2	0000	145	0.00	0.00	0.00	0.	0.
1	0140	11	0.07	0.06	0.01	0.	0.	*	2	0010	146	0.00	0.00	0.00	0.	0.
1	0150	12	0.07	0.06	0.01	0.	0.	*	2	0020	147	0.00	0.00	0.00	0.	0.
1	0200	13	0.07	0.05	0.02	0.	0.	*	2	0030	148	0.00	0.00	0.00	0.	0.
1	0210	14	0.06	0.05	0.02	0.	0.	*	2	0040	149	0.00	0.00	0.00	0.	0.
1	0220	15	0.07	0.05	0.02	0.	0.	*	2	0050	150	0.00	0.00	0.00	0.	0.
1	0230	16	0.06	0.04	0.02	0.	0.	*	2	0100	151	0.00	0.00	0.00	0.	0.
1	0240	17	0.06	0.04	0.02	1.	1.	*	2	0110	152	0.00	0.00	0.00	0.	0.
1	0250	18	0.06	0.04	0.02	1.	1.	*	2	0120	153	0.00	0.00	0.00	0.	0.
1	0300	19	0.06	0.04	0.03	1.	1.	*	2	0130	154	0.00	0.00	0.00	0.	0.
1	0310	20	0.08	0.04	0.03	1.	1.	*	2	0140	155	0.00	0.00	0.00	0.	0.
1	0320	21	0.07	0.04	0.03	2.	2.	*	2	0150	156	0.00	0.00	0.00	0.	0.
1	0330	22	0.08	0.04	0.04	2.	2.	*	2	0200	157	0.00	0.00	0.00	0.	0.
1	0340	23	0.08	0.04	0.04	3.	3.	*	2	0210	158	0.00	0.00	0.00	0.	0.
1	0350	24	0.07	0.04	0.04	3.	3.	*	2	0220	159	0.00	0.00	0.00	0.	0.
1	0400	25	0.08	0.03	0.04	4.	4.	*	2	0230	160	0.00	0.00	0.00	0.	0.
1	0410	26	0.08	0.03	0.04	4.	4.	*	2	0240	161	0.00	0.00	0.00	0.	0.
1	0420	27	0.07	0.03	0.04	5.	5.	*	2	0250	162	0.00	0.00	0.00	0.	0.
1	0430	28	0.08	0.03	0.05	6.	6.	*	2	0300	163	0.00	0.00	0.00	0.	0.
1	0440	29	0.10	0.04	0.06	6.	6.	*	2	0310	164	0.00	0.00	0.00	0.	0.
1	0450	30	0.10	0.04	0.06	7.	7.	*	2	0320	165	0.00	0.00	0.00	0.	0.
1	0500	31	0.10	0.03	0.07	8.	8.	*	2	0330	166	0.00	0.00	0.00	0.	0.
1	0510	32	0.13	0.04	0.08	8.	8.	*	2	0340	167	0.00	0.00	0.00	0.	0.
1	0520	33	0.12	0.04	0.09	9.	9.	*	2	0350	168	0.00	0.00	0.00	0.	0.
1	0530	34	0.13	0.04	0.09	10.	10.	*	2	0400	169	0.00	0.00	0.00	0.	0.
1	0540	35	0.12	0.03	0.09	11.	11.	*	2	0410	170	0.00	0.00	0.00	0.	0.
1	0550	36	0.13	0.03	0.09	12.	12.	*	2	0420	171	0.00	0.00	0.00	0.	0.
1	0600	37	0.12	0.03	0.09	13.	13.	*	2	0430	172	0.00	0.00	0.00	0.	0.
1	0610	38	0.15	0.03	0.12	14.	14.	*	2	0440	173	0.00	0.00	0.00	0.	0.
1	0620	39	0.15	0.03	0.12	15.	15.	*	2	0450	174	0.00	0.00	0.00	0.	0.
1	0630	40	0.15	0.03	0.12	17.	17.	*	2	0500	175	0.00	0.00	0.00	0.	0.
1	0640	41	0.18	0.03	0.14	18.	18.	*	2	0510	176	0.00	0.00	0.00	0.	0.
1	0650	42	0.17	0.03	0.14	20.	20.	*	2	0520	177	0.00	0.00	0.00	0.	0.
1	0700	43	0.18	0.03	0.15	21.	21.	*	2	0530	178	0.00	0.00	0.00	0.	0.
1	0710	44	0.25	0.04	0.21	23.	23.	*	2	0540	179	0.00	0.00	0.00	0.	0.
1	0720	45	0.25	0.04	0.21	25.	25.	*	2	0550	180	0.00	0.00	0.00	0.	0.
1	0730	46	0.25	0.03	0.22	27.	27.	*	2	0600	181	0.00	0.00	0.00	0.	0.
1	0740	47	0.22	0.03	0.20	29.	29.	*	2	0610	182	0.00	0.00	0.00	0.	0.
1	0750	48	0.23	0.03	0.20	32.	32.	*	2	0620	183	0.00	0.00	0.00	0.	0.
1	0800	49	0.22	0.02	0.20	34.	34.	*	2	0630	184	0.00	0.00	0.00	0.	0.
1	0810	50	0.23	0.02	0.20	37.	37.	*	2	0640	185	0.00	0.00	0.00	0.	0.
1	0820	51	0.22	0.02	0.20	39.	39.	*	2	0650	186	0.00	0.00	0.00	0.	0.
1	0830	52	0.23	0.02	0.20	42.	42.	*	2	0700	187	0.00	0.00	0.00	0.	0.
1	0840	53	0.12	0.01	0.11	45.	45.	*	2	0710	188	0.00	0.00	0.00	0.	0.
1	0850	54	0.13	0.01	0.11	48.	48.	*	2	0720	189	0.00	0.00	0.00	0.	0.
1	0900	55	0.12	0.01	0.11	50.	50.	*	2	0730	190	0.00	0.00	0.00	0.	0.
1	0910	56	0.07	0.01	0.07	53.	53.	*	2	0740	191	0.00	0.00	0.00	0.	0.
1	0920	57	0.07	0.01	0.07	55.	55.	*	2	0750	192	0.00	0.00	0.00	0.	0.
1	0930	58	0.07	0.01	0.07	56.	56.	*	2	0800	193	0.00	0.00	0.00	0.	0.
1	0940	59	0.07	0.01	0.07	57.	57.	*	2	0810	194	0.00	0.00	0.00	0.	0.
1	0950	60	0.08	0.01	0.07	58.	58.	*	2	0820	195	0.00	0.00	0.00	0.	0.
1	1000	61	0.07	0.01	0.07	58.	58.	*	2	0830	196	0.00	0.00	0.00	0.	0.
1	1010	62	0.06	0.00	0.06	58.	58.	*	2	0840	197	0.00	0.00	0.00	0.	0.
1	1020	63	0.07	0.00	0.06	57.	57.	*	2	0850	198	0.00	0.00	0.00	0.	0.
1	1030	64	0.06	0.00	0.06	56.	56.	*	2	0900	199	0.00	0.00	0.00	0.	0.
1	1040	65	0.06	0.00	0.05	55.	55.	*	2	0910	200	0.00	0.00	0.00	0.	0.
1	1050	66	0.06	0.00	0.05	54.	54.	*	2	0920	201	0.00	0.00	0.00	0.	0.
1	1100	67	0.06	0.00	0.05	53.	53.	*	2	0930	202	0.00	0.00	0.00	0.	0.
1	1110	68	0.06	0.00	0.05	52.	52.	*	2	0940	203	0.00	0.00	0.00	0.	0.
1	1120	69	0.06	0.00	0.05	51.	51.	*	2	0950	204	0.00	0.00	0.00	0.	0.
1	1130	70	0.06	0.00	0.05	51.	51.	*	2	1000	205	0.00	0.00	0.00	0.	0.
1	1140	71	0.05	0.00	0.05	50.	50.	*	2	1010	206	0.00	0.00	0.00	0.	0.
1	1150	72	0.05	0.00	0.05	49.	49.	*	2	1020	207	0.00	0.00	0.00	0.	0.
1	1200	73	0.05	0.00	0.05	48.	48.	*	2	1030	208	0.00	0.00	0.00	0.	0.
1	1210	74	0.00	0.00	0.00	47.	47.	*	2	1040	209	0.00	0.00	0.00	0.	0.
1	1220	75	0.00	0.00	0.00	47.	47.	*	2	1050	210	0.00	0.00	0.00	0.	0.
1	1230	76	0.00	0.00	0.00	46.	46.	*	2	1100	211	0.00	0.00	0.00	0.	0.
1	1240	77	0.00	0.00	0.00	45.	45.	*	2	1110	212	0.00	0.00	0.00	0.	0.
1	1250	78	0.00	0.00	0.00	44.	44.	*	2	1120	213	0.00	0.00	0.00	0.	0.
1	1300	79	0.00	0.00	0.00	43.	43.	*	2	1130	214	0.00	0.00	0.00	0.	0.
1	1310	80	0.00	0.00	0.00	42.	42.	*	2	1140	215	0.00	0.00	0.00	0.	0.
1	1320															

1	1400	85	0.00	0.00	0.00	35.	.	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	33.	.	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	32.	.	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	31.	.	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	30.	.	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	28.	.	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	27.	.	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	26.	.	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	25.	.	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	24.	.	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	23.	.	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	22.	.	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	21.	.	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	21.	.	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	20.	.	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	19.	.	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	18.	.	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	17.	.	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	17.	.	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	16.	.	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	15.	.	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	15.	.	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	14.	.	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	13.	.	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	13.	.	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	12.	.	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	11.	.	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	11.	.	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	10.	.	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	10.	.	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	9.	.	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	9.	.	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	8.	.	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	8.	.	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	7.	.	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	7.	.	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	6.	.	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	6.	.	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	5.	.	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	5.	.	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	5.	.	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	4.	.	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	4.	.	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	3.	.	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	3.	.	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	3.	.	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	3.	.	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	2.	.	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	2.	.	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	2.	.	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	2.	.	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 2.23, TOTAL EXCESS = 5.27

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW				44.83-HR
		6-HR	24-HR	72-HR		
58.	10.00	48.	20.	10.	10.	
		(INCHES)	2.800	4.546	4.546	4.546
		(AC-FT)	24.	39.	39.	39.

CUMULATIVE AREA = 0.16 SQ MI

46 KK SUB4
.....
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47 KO OUTPUT CONTROL VARIABLES
IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

48 BA SUBBASIN CHARACTERISTICS
TAREA 0.06 SUBBASIN AREA

PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

INCREMENTAL PRECIPITATION PATTERN									
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

49 LS SCS LOSS RATE
 STRTL 0.47 INITIAL ABSTRACTION
 CRVNBR 81.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

50 UI INPUT UNITGRAPH, 20 ORDINATES, VOLUME = 0.64
 0.0 5.5 15.3 24.6 23.7 16.7 12.8 10.4 8.5 6.9
 5.4 4.4 3.7 3.1 2.6 2.1 1.6 1.1 0.7 0.3

HYDROGRAPH AT STATION SUB4

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	.	*	1	2230	136	0.00	0.00	0.00	0.00	0.
1	0010	2	0.06	0.06	0.00	0.	.	*	1	2240	137	0.00	0.00	0.00	0.00	0.
1	0020	3	0.06	0.06	0.00	0.	.	*	1	2250	138	0.00	0.00	0.00	0.00	0.
1	0030	4	0.06	0.06	0.00	0.	.	*	1	2300	139	0.00	0.00	0.00	0.00	0.
1	0040	5	0.07	0.07	0.00	0.	.	*	1	2310	140	0.00	0.00	0.00	0.00	0.
1	0050	6	0.07	0.07	0.00	0.	.	*	1	2320	141	0.00	0.00	0.00	0.00	0.
1	0100	7	0.06	0.06	0.00	0.	.	*	1	2330	142	0.00	0.00	0.00	0.00	0.
1	0110	8	0.07	0.07	0.00	0.	.	*	1	2340	143	0.00	0.00	0.00	0.00	0.
1	0120	9	0.08	0.07	0.00	0.	.	*	1	2350	144	0.00	0.00	0.00	0.00	0.
1	0130	10	0.07	0.07	0.01	0.	.	*	2	0000	145	0.00	0.00	0.00	0.00	0.
1	0140	11	0.07	0.06	0.01	0.	.	*	2	0010	146	0.00	0.00	0.00	0.00	0.
1	0150	12	0.07	0.06	0.01	0.	.	*	2	0020	147	0.00	0.00	0.00	0.00	0.
1	0200	13	0.07	0.05	0.02	0.	.	*	2	0030	148	0.00	0.00	0.00	0.00	0.
1	0210	14	0.06	0.05	0.02	1.	.	*	2	0040	149	0.00	0.00	0.00	0.00	0.
1	0220	15	0.07	0.05	0.02	1.	.	*	2	0050	150	0.00	0.00	0.00	0.00	0.
1	0230	16	0.06	0.04	0.02	1.	.	*	2	0100	151	0.00	0.00	0.00	0.00	0.
1	0240	17	0.06	0.04	0.02	2.	.	*	2	0110	152	0.00	0.00	0.00	0.00	0.
1	0250	18	0.06	0.04	0.02	2.	.	*	2	0120	153	0.00	0.00	0.00	0.00	0.
1	0300	19	0.06	0.04	0.03	2.	.	*	2	0130	154	0.00	0.00	0.00	0.00	0.
1	0310	20	0.08	0.04	0.03	2.	.	*	2	0140	155	0.00	0.00	0.00	0.00	0.
1	0320	21	0.07	0.04	0.03	3.	.	*	2	0150	156	0.00	0.00	0.00	0.00	0.
1	0330	22	0.08	0.04	0.04	3.	.	*	2	0200	157	0.00	0.00	0.00	0.00	0.
1	0340	23	0.08	0.04	0.04	4.	.	*	2	0210	158	0.00	0.00	0.00	0.00	0.
1	0350	24	0.07	0.04	0.04	4.	.	*	2	0220	159	0.00	0.00	0.00	0.00	0.
1	0400	25	0.08	0.03	0.04	4.	.	*	2	0230	160	0.00	0.00	0.00	0.00	0.
1	0410	26	0.08	0.03	0.04	5.	.	*	2	0240	161	0.00	0.00	0.00	0.00	0.
1	0420	27	0.07	0.03	0.04	5.	.	*	2	0250	162	0.00	0.00	0.00	0.00	0.
1	0430	28	0.08	0.03	0.05	5.	.	*	2	0300	163	0.00	0.00	0.00	0.00	0.
1	0440	29	0.10	0.04	0.06	6.	.	*	2	0310	164	0.00	0.00	0.00	0.00	0.
1	0450	30	0.10	0.04	0.06	6.	.	*	2	0320	165	0.00	0.00	0.00	0.00	0.
1	0500	31	0.10	0.03	0.07	6.	.	*	2	0330	166	0.00	0.00	0.00	0.00	0.
1	0510	32	0.13	0.04	0.08	7.	.	*	2	0340	167	0.00	0.00	0.00	0.00	0.
1	0520	33	0.12	0.04	0.09	8.	.	*	2	0350	168	0.00	0.00	0.00	0.00	0.
1	0530	34	0.13	0.04	0.09	8.	.	*	2	0400	169	0.00	0.00	0.00	0.00	0.
1	0540	35	0.12	0.03	0.09	9.	.	*	2	0410	170	0.00	0.00	0.00	0.00	0.
1	0550	36	0.13	0.03	0.09	10.	.	*	2	0420	171	0.00	0.00	0.00	0.00	0.
1	0600	37	0.12	0.03	0.09	11.	.	*	2	0430	172	0.00	0.00	0.00	0.00	0.
1	0610	38	0.15	0.03	0.12	11.	.	*	2	0440	173	0.00	0.00	0.00	0.00	0.
1	0620	39	0.15	0.03	0.12	12.	.	*	2	0450	174	0.00	0.00	0.00	0.00	0.
1	0630	40	0.15	0.03	0.12	13.	.	*	2	0500	175	0.00	0.00	0.00	0.00	0.
1	0640	41	0.18	0.03	0.14	14.	.	*	2	0510	176	0.00	0.00	0.00	0.00	0.
1	0650	42	0.17	0.03	0.14	15.	.	*	2	0520	177	0.00	0.00	0.00	0.00	0.
1	0700	43	0.18	0.03	0.15	16.	.	*	2	0530	178	0.00	0.00	0.00	0.00	0.
1	0710	44	0.25	0.04	0.21	17.	.	*	2	0540	179	0.00	0.00	0.00	0.00	0.
1	0720	45	0.25	0.04	0.21	18.	.	*	2	0550	180	0.00	0.00	0.00	0.00	0.
1	0730	46	0.25	0.03	0.22	20.	.	*	2	0600	181	0.00	0.00	0.00	0.00	0.
1	0740	47	0.22	0.03	0.20	22.	.	*	2	0610	182	0.00	0.00	0.00	0.00	0.
1	0750	48	0.23	0.03	0.20	25.	.	*	2	0620	183	0.00	0.00	0.00	0.00	0.
1	0800	49	0.22	0.02	0.20	26.	.	*	2	0630	184	0.00	0.00	0.00	0.00	0.
1	0810	50	0.23	0.02	0.20	27.	.	*	2	0640	185	0.00	0.00	0.00	0.00	0.
1	0820	51	0.22	0.02	0.20	27.	.	*	2	0650	186	0.00	0.00	0.00	0.00	0.
1	0830	52	0.23	0.02	0.20	28.	.	*	2	0700	187	0.00	0.00	0.00	0.00	0.
1	0840	53	0.12	0.01	0.11	29.	.	*	2	0710	188	0.00	0.00	0.00	0.00	0.
1	0850	54	0.13	0.01	0.11	28.	.	*	2	0720	189	0.00	0.00	0.00	0.00	0.
1	0900	55	0.12	0.01	0.11	27.	.	*	2	0730	190	0.00	0.00	0.00	0.00	0.
1	0910	56	0.07	0.01	0.07	26.	.	*	2	0740	191	0.00	0.00	0.00	0.00	0.
1	0920	57	0.07	0.01	0.07	23.	.	*	2	0750	192	0.00	0.00	0.00	0.00	0.
1	0930	58	0.07	0.01	0.07	21.	.	*	2	0800	193	0.00	0.00	0.00	0.00	0.
1	0940	59	0.07	0.01	0.07	19.	.	*	2	0810	194	0.00	0.00	0.00	0.00	0.
1	0950	60	0.08	0.01	0.07	17.	.	*	2	0820	195	0.00	0.00	0.00	0.00	0.
1	1000	61	0.07	0.01	0.07	16.	.	*	2	0830	196	0.00	0.00	0.00	0.00	0.
1	1010	62	0.06	0.00	0.06	15.	.	*	2	0840	197	0.00	0.00	0.00	0.00	0.
1	1020	63	0.07	0.00	0.06	14.	.	*	2	0850	198	0.00	0.00	0.00	0.00	0.
1	1030	64	0.06	0.00	0.06	13.	.	*	2	0900	199	0.00	0.00	0.00	0.00	0.
1	1040	65	0.06	0.00	0.05	12.	.	*	2	0910	200	0.00	0.00	0.00	0.00	0.
1	1050	66	0.06	0.00	0.05	11.	.	*	2	0920	201	0.00	0.00	0.00	0.00	0.
1	1100	67	0.06	0.00	0.05	11.	.	*	2	0930	202	0.00	0.00	0.00	0.00	0.
1	1110	68	0.06	0.00	0.05	10.	.	*	2	0940	203	0.00	0.00	0.00	0.00	0.
1	1120	69	0.06	0.00	0.05	9.	.	*	2	0950	204	0.00	0.00	0.00	0.00	0.
1	1130	70	0.06	0.00	0.05	9.	.	*	2	1000	205	0.00	0.00	0.00	0.00	0.
1	1140	71	0.05	0.00	0.05	9.	.	*	2	1010	206	0.00	0.00	0.00	0.00	0.
1	1150	72	0.05	0.00	0.05	8.	.	*	2	1020	207	0.00	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	8.	.	*	2	1030	208	0.00	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	8.	.	*	2	1040	209	0.00	0.00	0.00	0.00	0.
1	1220	75	0.00	0.00	0.00	7.	.	*	2	1050	210	0.00	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	6.	.	*	2	1100	211	0.00	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	5.	.	*	2	1110	212	0.00	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	4.	.	*	2	1120	213	0.00	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	3.	.	*	2	1130	214	0.00	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	3.	.	*	2	1140	215	0.00	0.00	0.00	0.00	0.

1	1330	82	0.00	0.00	0.00	2.	*	2	1200	217	0.00	0.00	0.00	0.
1	1340	83	0.00	0.00	0.00	1.	*	2	1210	218	0.00	0.00	0.00	0.
1	1350	84	0.00	0.00	0.00	1.	*	2	1220	219	0.00	0.00	0.00	0.
1	1400	85	0.00	0.00	0.00	1.	*	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	1.	*	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	0.	*	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	0.	*	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	0.	*	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	0.	*	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	0.	*	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	0.	*	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	0.	*	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	0.	*	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	0.	*	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	0.	*	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	0.	*	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	0.	*	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	0.	*	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	0.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	0.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	0.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	0.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	0.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	0.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	0.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	0.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	0.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	0.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	0.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	0.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	0.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	0.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	0.	*	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 2.23, TOTAL EXCESS = 5.27

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			44.83-HR
		6-HR	24-HR	72-HR	
+ 29.	8.67	18.	5.	3.	3.
		(INCHES)	2.725	3.390	3.390
		(AC-FT)	9.	11.	11.

CUMULATIVE AREA = 0.06 SQ MI

54 KK

OUTPUT CONTROL VARIABLES
 IPRNT 1 PRINT CONTROL
 IPLOT 0 PLOT CONTROL
 QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

56 BA

SUBBASIN CHARACTERISTICS
 TAREA 0.04 SUBBASIN AREA

PRECIPITATION DATA

10 PB

STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI

INCREMENTAL PRECIPITATION PATTERN
 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01
 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01
 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02
 0.02 0.02 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03

0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01										

57 LS SCS LOSS RATE
 STRTL 0.47 INITIAL ABSTRACTION
 CRVNBR 81.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

58 UI INPUT UNITGRAPH, 59 ORDINATES, VOLUME = 0.68
 0.0 0.7 1.4 2.4 3.4 4.6 5.4 5.5 5.3 5.0
 4.6 3.9 3.6 3.4 3.2 3.0 2.8 2.7 2.6 2.4
 2.3 2.2 2.1 2.1 2.0 1.9 1.8 1.7 1.6 1.6
 1.5 1.4 1.4 1.3 1.2 1.1 1.1 1.0 1.0 0.9
 0.9 0.8 0.8 0.7 0.7 0.6 0.6 0.5 0.5 0.4
 0.4 0.3 0.3 0.3 0.2 0.2 0.1 0.1 0.1 0.1

HYDROGRAPH AT STATION SUB5

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	*	1	2230	136	0.00	0.00	0.00	0.00	0.
1	0010	2	0.06	0.06	0.00	0.	*	1	2240	137	0.00	0.00	0.00	0.00	0.
1	0020	3	0.06	0.06	0.00	0.	*	1	2250	138	0.00	0.00	0.00	0.00	0.
1	0030	4	0.06	0.06	0.00	0.	*	1	2300	139	0.00	0.00	0.00	0.00	0.
1	0040	5	0.07	0.07	0.00	0.	*	1	2310	140	0.00	0.00	0.00	0.00	0.
1	0050	6	0.07	0.07	0.00	0.	*	1	2320	141	0.00	0.00	0.00	0.00	0.
1	0100	7	0.06	0.06	0.00	0.	*	1	2330	142	0.00	0.00	0.00	0.00	0.
1	0110	8	0.07	0.07	0.00	0.	*	1	2340	143	0.00	0.00	0.00	0.00	0.
1	0120	9	0.08	0.07	0.00	0.	*	1	2350	144	0.00	0.00	0.00	0.00	0.
1	0130	10	0.07	0.07	0.01	0.	*	2	0000	145	0.00	0.00	0.00	0.00	0.
1	0140	11	0.07	0.06	0.01	0.	*	2	0010	146	0.00	0.00	0.00	0.00	0.
1	0150	12	0.07	0.06	0.01	0.	*	2	0020	147	0.00	0.00	0.00	0.00	0.
1	0200	13	0.07	0.05	0.02	0.	*	2	0030	148	0.00	0.00	0.00	0.00	0.
1	0210	14	0.06	0.05	0.02	0.	*	2	0040	149	0.00	0.00	0.00	0.00	0.
1	0220	15	0.07	0.05	0.02	0.	*	2	0050	150	0.00	0.00	0.00	0.00	0.
1	0230	16	0.06	0.04	0.02	0.	*	2	0100	151	0.00	0.00	0.00	0.00	0.
1	0240	17	0.06	0.04	0.02	0.	*	2	0110	152	0.00	0.00	0.00	0.00	0.
1	0250	18	0.06	0.04	0.02	0.	*	2	0120	153	0.00	0.00	0.00	0.00	0.
1	0300	19	0.06	0.04	0.03	0.	*	2	0130	154	0.00	0.00	0.00	0.00	0.
1	0310	20	0.08	0.04	0.03	1.	*	2	0140	155	0.00	0.00	0.00	0.00	0.
1	0320	21	0.07	0.04	0.03	1.	*	2	0150	156	0.00	0.00	0.00	0.00	0.
1	0330	22	0.08	0.04	0.04	1.	*	2	0200	157	0.00	0.00	0.00	0.00	0.
1	0340	23	0.08	0.04	0.04	1.	*	2	0210	158	0.00	0.00	0.00	0.00	0.
1	0350	24	0.07	0.04	0.04	1.	*	2	0220	159	0.00	0.00	0.00	0.00	0.
1	0400	25	0.08	0.03	0.04	1.	*	2	0230	160	0.00	0.00	0.00	0.00	0.
1	0410	26	0.08	0.03	0.04	1.	*	2	0240	161	0.00	0.00	0.00	0.00	0.
1	0420	27	0.07	0.03	0.04	2.	*	2	0250	162	0.00	0.00	0.00	0.00	0.
1	0430	28	0.08	0.03	0.05	2.	*	2	0300	163	0.00	0.00	0.00	0.00	0.
1	0440	29	0.10	0.04	0.06	2.	*	2	0310	164	0.00	0.00	0.00	0.00	0.
1	0450	30	0.10	0.04	0.06	2.	*	2	0320	165	0.00	0.00	0.00	0.00	0.
1	0500	31	0.10	0.03	0.07	2.	*	2	0330	166	0.00	0.00	0.00	0.00	0.
1	0510	32	0.13	0.04	0.08	2.	*	2	0340	167	0.00	0.00	0.00	0.00	0.
1	0520	33	0.12	0.04	0.09	3.	*	2	0350	168	0.00	0.00	0.00	0.00	0.
1	0530	34	0.13	0.04	0.09	3.	*	2	0400	169	0.00	0.00	0.00	0.00	0.
1	0540	35	0.12	0.03	0.09	3.	*	2	0410	170	0.00	0.00	0.00	0.00	0.
1	0550	36	0.13	0.03	0.09	3.	*	2	0420	171	0.00	0.00	0.00	0.00	0.
1	0600	37	0.12	0.03	0.09	4.	*	2	0430	172	0.00	0.00	0.00	0.00	0.
1	0610	38	0.15	0.03	0.12	4.	*	2	0440	173	0.00	0.00	0.00	0.00	0.
1	0620	39	0.15	0.03	0.12	4.	*	2	0450	174	0.00	0.00	0.00	0.00	0.
1	0630	40	0.15	0.03	0.12	5.	*	2	0500	175	0.00	0.00	0.00	0.00	0.
1	0640	41	0.18	0.03	0.14	5.	*	2	0510	176	0.00	0.00	0.00	0.00	0.
1	0650	42	0.17	0.03	0.14	6.	*	2	0520	177	0.00	0.00	0.00	0.00	0.
1	0700	43	0.18	0.03	0.15	6.	*	2	0530	178	0.00	0.00	0.00	0.00	0.
1	0710	44	0.25	0.04	0.21	6.	*	2	0540	179	0.00	0.00	0.00	0.00	0.
1	0720	45	0.25	0.04	0.21	7.	*	2	0550	180	0.00	0.00	0.00	0.00	0.
1	0730	46	0.25	0.03	0.22	8.	*	2	0600	181	0.00	0.00	0.00	0.00	0.
1	0740	47	0.22	0.03	0.20	8.	*	2	0610	182	0.00	0.00	0.00	0.00	0.
1	0750	48	0.23	0.03	0.20	9.	*	2	0620	183	0.00	0.00	0.00	0.00	0.
1	0800	49	0.22	0.02	0.20	10.	*	2	0630	184	0.00	0.00	0.00	0.00	0.
1	0810	50	0.23	0.02	0.20	10.	*	2	0640	185	0.00	0.00	0.00	0.00	0.
1	0820	51	0.22	0.02	0.20	11.	*	2	0650	186	0.00	0.00	0.00	0.00	0.
1	0830	52	0.23	0.02	0.20	12.	*	2	0700	187	0.00	0.00	0.00	0.00	0.
1	0840	53	0.12	0.01	0.11	12.	*	2	0710	188	0.00	0.00	0.00	0.00	0.
1	0850	54	0.13	0.01	0.11	13.	*	2	0720	189	0.00	0.00	0.00	0.00	0.
1	0900	55	0.12	0.01	0.11	13.	*	2	0730	190	0.00	0.00	0.00	0.00	0.
1	0910	56	0.07	0.01	0.07	13.	*	2	0740	191	0.00	0.00	0.00	0.00	0.
1	0920	57	0.07	0.01	0.07	14.	*	2	0750	192	0.00	0.00	0.00	0.00	0.
1	0930	58	0.07	0.01	0.07	14.	*	2	0800	193	0.00	0.00	0.00	0.00	0.
1	0940	59	0.07	0.01	0.07	13.	*	2	0810	194	0.00	0.00	0.00	0.00	0.
1	0950	60	0.08	0.01	0.07	13.	*	2	0820	195	0.00	0.00	0.00	0.00	0.
1	1000	61	0.07	0.01	0.07	13.	*	2	0830	196	0.00	0.00	0.00	0.00	0.
1	1010	62	0.06	0.00	0.06	12.	*	2	0840	197	0.00	0.00	0.00	0.00	0.
1	1020	63	0.07	0.00	0.06	12.	*	2	0850	198	0.00	0.00	0.00	0.00	0.
1	1030	64	0.06	0.00	0.06	12.	*	2	0900	199	0.00	0.00	0.00	0.00	0.
1	1040	65	0.06	0.00	0.05	12.	*	2	0910	200	0.00	0.00	0.00	0.00	0.
1	1050	66	0.06	0.00	0.05	11.	*	2	0920	201	0.00	0.00	0.00	0.00	0.
1	1100	67	0.06	0.00	0.05	11.	*	2	0930	202	0.00	0.00	0.00	0.00	0.
1	1110	68	0.06	0.00	0.05	11.	*	2	0940	203	0.00	0.00	0.00	0.00	0.
1	1120	69	0.06	0.00	0.05	11.	*	2	0950	204	0.00	0.00	0.00	0.00	0.
1	1130	70	0.06	0.00	0.05	10.	*	2	1000	205	0.00	0.00	0.00	0.00	0.
1	1140	71	0.05	0.00	0.05	10.	*	2	1010	206	0.00	0.00	0.00	0.00	0.
1	1150	72	0.05	0.00	0.05	10.	*	2	1020	207	0.00	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	10.	*	2	1030	208	0.00	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	10.	*	2	1040	209	0.00	0.00	0.00	0.00	0.

1	1220	75	0.00	0.00	0.00	9.	*	2	1050	210	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	9.	*	2	1100	211	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	9.	*	2	1110	212	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	8.	*	2	1120	213	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	8.	*	2	1130	214	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	8.	*	2	1140	215	0.00	0.00	0.00	0.
1	1320	81	0.00	0.00	0.00	7.	*	2	1150	216	0.00	0.00	0.00	0.
1	1330	82	0.00	0.00	0.00	7.	*	2	1200	217	0.00	0.00	0.00	0.
1	1340	83	0.00	0.00	0.00	6.	*	2	1210	218	0.00	0.00	0.00	0.
1	1350	84	0.00	0.00	0.00	6.	*	2	1220	219	0.00	0.00	0.00	0.
1	1400	85	0.00	0.00	0.00	6.	*	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	5.	*	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	5.	*	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	5.	*	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	4.	*	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	4.	*	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	4.	*	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	4.	*	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	3.	*	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	3.	*	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	3.	*	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	3.	*	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	2.	*	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	2.	*	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	2.	*	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	2.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	2.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	2.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	1.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	1.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	1.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	1.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	1.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	1.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	1.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	1.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	1.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	1.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	0.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	0.	*	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 2.23, TOTAL EXCESS = 5.27

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	44.83-HR
+ 14.	9.33	11.	4.	2.	2.
		(INCHES)	2.487	3.595	3.595
		(AC-FT)	5.	8.	8.

CUMULATIVE AREA = 0.04 SQ MI

66 KK SUB6 .

67 KO OUTPUT CONTROL VARIABLES
IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

68 BA SUBBASIN CHARACTERISTICS
TAREA 0.09 SUBBASIN AREA

PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI

INCREMENTAL PRECIPITATION PATTERN

0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

69 LS

SCS LOSS RATE

STRTL 0.35 INITIAL ABSTRACTION
 CRVNBR 85.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

70 UI

INPUT UNITGRAPH, 33 ORDINATES, VOLUME = 0.81

0.0	4.1	9.2	16.8	24.8	27.7	26.4	23.0	18.1	15.7
13.7	12.3	11.0	9.8	8.8	7.9	7.1	6.0	5.4	4.9
4.4	3.9	3.5	3.1	2.8	2.4	2.1	1.8	1.4	1.1
0.8	0.5	0.2							

HYDROGRAPH AT STATION SUB6

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
								*								
1	0000	1	0.00	0.00	0.00	0.	0.	*	1	2230	136	0.00	0.00	0.00	0.	0.
1	0010	2	0.06	0.06	0.00	0.	0.	*	1	2240	137	0.00	0.00	0.00	0.	0.
1	0020	3	0.06	0.06	0.00	0.	0.	*	1	2250	138	0.00	0.00	0.00	0.	0.
1	0030	4	0.06	0.06	0.00	0.	0.	*	1	2300	139	0.00	0.00	0.00	0.	0.
1	0040	5	0.07	0.07	0.00	0.	0.	*	1	2310	140	0.00	0.00	0.00	0.	0.
1	0050	6	0.07	0.07	0.00	0.	0.	*	1	2320	141	0.00	0.00	0.00	0.	0.
1	0100	7	0.06	0.06	0.00	0.	0.	*	1	2330	142	0.00	0.00	0.00	0.	0.
1	0110	8	0.07	0.07	0.00	0.	0.	*	1	2340	143	0.00	0.00	0.00	0.	0.
1	0120	9	0.08	0.06	0.01	0.	0.	*	1	2350	144	0.00	0.00	0.00	0.	0.
1	0130	10	0.07	0.06	0.02	0.	0.	*	2	0000	145	0.00	0.00	0.00	0.	0.
1	0140	11	0.07	0.05	0.02	0.	0.	*	2	0010	146	0.00	0.00	0.00	0.	0.
1	0150	12	0.07	0.05	0.02	1.	1.	*	2	0020	147	0.00	0.00	0.00	0.	0.
1	0200	13	0.07	0.05	0.02	1.	1.	*	2	0030	148	0.00	0.00	0.00	0.	0.
1	0210	14	0.06	0.04	0.03	1.	1.	*	2	0040	149	0.00	0.00	0.00	0.	0.
1	0220	15	0.07	0.04	0.03	2.	2.	*	2	0050	150	0.00	0.00	0.00	0.	0.
1	0230	16	0.06	0.04	0.03	3.	3.	*	2	0100	151	0.00	0.00	0.00	0.	0.
1	0240	17	0.06	0.03	0.03	3.	3.	*	2	0110	152	0.00	0.00	0.00	0.	0.
1	0250	18	0.06	0.03	0.03	4.	4.	*	2	0120	153	0.00	0.00	0.00	0.	0.
1	0300	19	0.06	0.03	0.03	4.	4.	*	2	0130	154	0.00	0.00	0.00	0.	0.
1	0310	20	0.08	0.03	0.04	5.	5.	*	2	0140	155	0.00	0.00	0.00	0.	0.
1	0320	21	0.07	0.03	0.04	5.	5.	*	2	0150	156	0.00	0.00	0.00	0.	0.
1	0330	22	0.08	0.03	0.05	6.	6.	*	2	0200	157	0.00	0.00	0.00	0.	0.
1	0340	23	0.08	0.03	0.05	7.	7.	*	2	0210	158	0.00	0.00	0.00	0.	0.
1	0350	24	0.07	0.03	0.05	7.	7.	*	2	0220	159	0.00	0.00	0.00	0.	0.
1	0400	25	0.08	0.03	0.05	8.	8.	*	2	0230	160	0.00	0.00	0.00	0.	0.
1	0410	26	0.08	0.02	0.05	9.	9.	*	2	0240	161	0.00	0.00	0.00	0.	0.
1	0420	27	0.07	0.02	0.05	9.	9.	*	2	0250	162	0.00	0.00	0.00	0.	0.
1	0430	28	0.08	0.02	0.05	10.	10.	*	2	0300	163	0.00	0.00	0.00	0.	0.
1	0440	29	0.10	0.03	0.07	10.	10.	*	2	0310	164	0.00	0.00	0.00	0.	0.
1	0450	30	0.10	0.03	0.07	11.	11.	*	2	0320	165	0.00	0.00	0.00	0.	0.
1	0500	31	0.10	0.02	0.08	12.	12.	*	2	0330	166	0.00	0.00	0.00	0.	0.
1	0510	32	0.13	0.03	0.10	12.	12.	*	2	0340	167	0.00	0.00	0.00	0.	0.
1	0520	33	0.12	0.03	0.10	13.	13.	*	2	0350	168	0.00	0.00	0.00	0.	0.
1	0530	34	0.13	0.03	0.10	15.	15.	*	2	0400	169	0.00	0.00	0.00	0.	0.
1	0540	35	0.12	0.02	0.10	16.	16.	*	2	0410	170	0.00	0.00	0.00	0.	0.
1	0550	36	0.13	0.02	0.10	17.	17.	*	2	0420	171	0.00	0.00	0.00	0.	0.
1	0600	37	0.12	0.02	0.10	19.	19.	*	2	0430	172	0.00	0.00	0.00	0.	0.
1	0610	38	0.15	0.02	0.13	20.	20.	*	2	0440	173	0.00	0.00	0.00	0.	0.
1	0620	39	0.15	0.02	0.13	21.	21.	*	2	0450	174	0.00	0.00	0.00	0.	0.
1	0630	40	0.15	0.02	0.13	22.	22.	*	2	0500	175	0.00	0.00	0.00	0.	0.
1	0640	41	0.18	0.02	0.15	24.	24.	*	2	0510	176	0.00	0.00	0.00	0.	0.
1	0650	42	0.17	0.02	0.15	25.	25.	*	2	0520	177	0.00	0.00	0.00	0.	0.
1	0700	43	0.18	0.02	0.16	27.	27.	*	2	0530	178	0.00	0.00	0.00	0.	0.
1	0710	44	0.25	0.03	0.22	28.	28.	*	2	0540	179	0.00	0.00	0.00	0.	0.
1	0720	45	0.25	0.02	0.23	30.	30.	*	2	0550	180	0.00	0.00	0.00	0.	0.
1	0730	46	0.25	0.02	0.23	33.	33.	*	2	0600	181	0.00	0.00	0.00	0.	0.
1	0740	47	0.22	0.02	0.21	35.	35.	*	2	0610	182	0.00	0.00	0.00	0.	0.
1	0750	48	0.23	0.02	0.21	38.	38.	*	2	0620	183	0.00	0.00	0.00	0.	0.
1	0800	49	0.22	0.02	0.21	41.	41.	*	2	0630	184	0.00	0.00	0.00	0.	0.
1	0810	50	0.23	0.01	0.21	44.	44.	*	2	0640	185	0.00	0.00	0.00	0.	0.
1	0820	51	0.22	0.01	0.21	46.	46.	*	2	0650	186	0.00	0.00	0.00	0.	0.
1	0830	52	0.23	0.01	0.21	48.	48.	*	2	0700	187	0.00	0.00	0.00	0.	0.
1	0840	53	0.12	0.01	0.12	49.	49.	*	2	0710	188	0.00	0.00	0.00	0.	0.
1	0850	54	0.13	0.01	0.12	50.	50.	*	2	0720	189	0.00	0.00	0.00	0.	0.
1	0900	55	0.12	0.01	0.12	50.	50.	*	2	0730	190	0.00	0.00	0.00	0.	0.
1	0910	56	0.07	0.00	0.07	50.	50.	*	2	0740	191	0.00	0.00	0.00	0.	0.
1	0920	57	0.07	0.00	0.07	48.	48.	*	2	0750	192	0.00	0.00	0.00	0.	0.
1	0930	58	0.07	0.00	0.07	46.	46.	*	2	0800	193	0.00	0.00	0.00	0.	0.
1	0940	59	0.07	0.00	0.07	44.	44.	*	2	0810	194	0.00	0.00	0.00	0.	0.
1	0950	60	0.08	0.00	0.07	41.	41.	*	2	0820	195	0.00	0.00	0.00	0.	0.
1	1000	61	0.07	0.00	0.07	38.	38.	*	2	0830	196	0.00	0.00	0.00	0.	0.
1	1010	62	0.06	0.00	0.06	36.	36.	*	2	0840	197	0.00	0.00	0.00	0.	0.
1	1020	63	0.07	0.00	0.06	34.	34.	*	2	0850	198	0.00	0.00	0.00	0.	0.
1	1030	64	0.06	0.00	0.06	33.	33.	*	2	0900	199	0.00	0.00	0.00	0.	0.
1	1040	65	0.06	0.00	0.05	31.	31.	*	2	0910	200	0.00	0.00	0.00	0.	0.
1	1050	66	0.06	0.00	0.05	29.	29.	*	2	0920	201	0.00	0.00	0.00	0.	0.
1	1100	67	0.06	0.00	0.05	28.	28.	*	2	0930	202	0.00	0.00	0.00	0.	0.
1	1110	68	0.06	0.00	0.05	27.	27.	*	2	0940	203	0.00</td				

1	1130	70	0.06	0.00	0.05	24.	*	2	1000	205	0.00	0.00	0.00	0.
1	1140	71	0.05	0.00	0.05	23.	*	2	1010	206	0.00	0.00	0.00	0.
1	1150	72	0.05	0.00	0.05	22.	*	2	1020	207	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	21.	*	2	1030	208	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	20.	*	2	1040	209	0.00	0.00	0.00	0.
1	1220	75	0.00	0.00	0.00	19.	*	2	1050	210	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	17.	*	2	1100	211	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	16.	*	2	1110	212	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	14.	*	2	1120	213	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	12.	*	2	1130	214	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	10.	*	2	1140	215	0.00	0.00	0.00	0.
1	1320	81	0.00	0.00	0.00	9.	*	2	1150	216	0.00	0.00	0.00	0.
1	1330	82	0.00	0.00	0.00	8.	*	2	1200	217	0.00	0.00	0.00	0.
1	1340	83	0.00	0.00	0.00	7.	*	2	1210	218	0.00	0.00	0.00	0.
1	1350	84	0.00	0.00	0.00	6.	*	2	1220	219	0.00	0.00	0.00	0.
1	1400	85	0.00	0.00	0.00	5.	*	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	4.	*	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	4.	*	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	3.	*	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	3.	*	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	2.	*	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	2.	*	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	2.	*	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	1.	*	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	1.	*	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	1.	*	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	1.	*	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	1.	*	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	1.	*	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	0.	*	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	0.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	0.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	0.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	0.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	0.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	0.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	0.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	0.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	0.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	0.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	0.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	0.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	0.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	0.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	0.	*	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 1.77, TOTAL EXCESS = 5.73

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	44.63-HR
+ 50.	9.00	34.	11.	6.	6.
		(INCHES)	3.533	4.617	4.617
		(AC-FT)	17.	22.	22.

CUMULATIVE AREA = 0.09 SQ MI

76 KK
 * SUB7 *
 * * * * *
 77 KO OUTPUT CONTROL VARIABLES
 IPRNT 1 PRINT CONTROL
 IPLOT 0 PLOT CONTROL
 QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

78 BA SUBBASIN CHARACTERISTICS

TAREA 0.12 SUBBASIN AREA

PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI	INCREMENTAL PRECIPITATION PATTERN									
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

79 LS SCS LOSS RATE
 STRTL 0.35 INITIAL ABSTRACTION
 CRVNBR 85.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

80 UI INPUT UNITGRAPH, 105 ORDINATES, VOLUME = 1.05

0.0	1.0	2.0	3.0	4.2	5.7	7.2	8.8	10.4	12.3
13.6	14.2	14.2	14.0	13.8	13.5	13.0	12.5	10.7	10.3
9.9	9.6	9.2	8.9	8.6	8.3	8.0	7.7	7.5	7.2
7.0	6.8	6.7	6.5	6.3	6.2	6.0	5.9	5.7	5.6
5.5	5.3	5.2	5.1	4.9	4.8	4.7	4.6	4.5	4.4
4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6	3.4	3.3
3.2	3.1	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.4
2.3	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7
1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.1	1.1	1.0
0.9	0.9	0.8	0.8	0.7	0.6	0.6	0.5	0.4	0.4
0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1

HYDROGRAPH AT STATION SUB7

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	*	*	1	2230	136	0.00	0.00	0.00	0.00	6.
1	0010	2	0.06	0.06	0.00	0.	*	*	1	2240	137	0.00	0.00	0.00	0.00	5.
1	0020	3	0.06	0.06	0.00	0.	*	*	1	2250	138	0.00	0.00	0.00	0.00	5.
1	0030	4	0.06	0.06	0.00	0.	*	*	1	2300	139	0.00	0.00	0.00	0.00	5.
1	0040	5	0.07	0.07	0.00	0.	*	*	1	2310	140	0.00	0.00	0.00	0.00	4.
1	0050	6	0.07	0.07	0.00	0.	*	*	1	2320	141	0.00	0.00	0.00	0.00	4.
1	0100	7	0.06	0.06	0.00	0.	*	*	1	2330	142	0.00	0.00	0.00	0.00	4.
1	0110	8	0.07	0.07	0.00	0.	*	*	1	2340	143	0.00	0.00	0.00	0.00	4.
1	0120	9	0.08	0.06	0.01	0.	*	*	1	2350	144	0.00	0.00	0.00	0.00	3.
1	0130	10	0.07	0.06	0.02	0.	*	*	2	0000	145	0.00	0.00	0.00	0.00	3.
1	0140	11	0.07	0.05	0.02	0.	*	*	2	0010	146	0.00	0.00	0.00	0.00	3.
1	0150	12	0.07	0.05	0.02	0.	*	*	2	0020	147	0.00	0.00	0.00	0.00	3.
1	0200	13	0.07	0.05	0.02	0.	*	*	2	0030	148	0.00	0.00	0.00	0.00	2.
1	0210	14	0.06	0.04	0.03	0.	*	*	2	0040	149	0.00	0.00	0.00	0.00	2.
1	0220	15	0.07	0.04	0.03	0.	*	*	2	0050	150	0.00	0.00	0.00	0.00	2.
1	0230	16	0.06	0.04	0.03	1.	*	*	2	0100	151	0.00	0.00	0.00	0.00	2.
1	0240	17	0.06	0.03	0.03	1.	*	*	2	0110	152	0.00	0.00	0.00	0.00	2.
1	0250	18	0.06	0.03	0.03	1.	*	*	2	0120	153	0.00	0.00	0.00	0.00	1.
1	0300	19	0.06	0.03	0.03	1.	*	*	2	0130	154	0.00	0.00	0.00	0.00	1.
1	0310	20	0.08	0.03	0.04	2.	*	*	2	0140	155	0.00	0.00	0.00	0.00	1.
1	0320	21	0.07	0.03	0.04	2.	*	*	2	0150	156	0.00	0.00	0.00	0.00	1.
1	0330	22	0.08	0.03	0.05	3.	*	*	2	0200	157	0.00	0.00	0.00	0.00	1.
1	0340	23	0.08	0.03	0.05	3.	*	*	2	0210	158	0.00	0.00	0.00	0.00	1.
1	0350	24	0.07	0.03	0.05	3.	*	*	2	0220	159	0.00	0.00	0.00	0.00	1.
1	0400	25	0.08	0.03	0.05	4.	*	*	2	0230	160	0.00	0.00	0.00	0.00	1.
1	0410	26	0.08	0.02	0.05	4.	*	*	2	0240	161	0.00	0.00	0.00	0.00	1.
1	0420	27	0.07	0.02	0.05	5.	*	*	2	0250	162	0.00	0.00	0.00	0.00	0.
1	0430	28	0.08	0.02	0.05	6.	*	*	2	0300	163	0.00	0.00	0.00	0.00	0.
1	0440	29	0.10	0.03	0.07	6.	*	*	2	0310	164	0.00	0.00	0.00	0.00	0.
1	0450	30	0.10	0.03	0.07	7.	*	*	2	0320	165	0.00	0.00	0.00	0.00	0.
1	0500	31	0.10	0.02	0.08	7.	*	*	2	0330	166	0.00	0.00	0.00	0.00	0.
1	0510	32	0.13	0.03	0.10	8.	*	*	2	0340	167	0.00	0.00	0.00	0.00	0.
1	0520	33	0.12	0.03	0.10	9.	*	*	2	0350	168	0.00	0.00	0.00	0.00	0.
1	0530	34	0.13	0.03	0.10	9.	*	*	2	0400	169	0.00	0.00	0.00	0.00	0.
1	0540	35	0.12	0.02	0.10	10.	*	*	2	0410	170	0.00	0.00	0.00	0.00	0.
1	0550	36	0.13	0.02	0.10	11.	*	*	2	0420	171	0.00	0.00	0.00	0.00	0.
1	0600	37	0.12	0.02	0.10	12.	*	*	2	0430	172	0.00	0.00	0.00	0.00	0.
1	0610	38	0.15	0.02	0.13	13.	*	*	2	0440	173	0.00	0.00	0.00	0.00	0.
1	0620	39	0.15	0.02	0.13	14.	*	*	2	0450	174	0.00	0.00	0.00	0.00	0.
1	0630	40	0.15	0.02	0.13	15.	*	*	2	0500	175	0.00	0.00	0.00	0.00	0.
1	0640	41	0.18	0.02	0.15	16.	*	*	2	0510	176	0.00	0.00	0.00	0.00	0.
1	0650	42	0.17	0.02	0.15	17.	*	*	2	0520	177	0.00	0.00	0.00	0.00	0.
1	0700	43	0.18	0.02	0.16	19.	*	*	2	0530	178	0.00	0.00	0.00	0.00	0.
1	0710	44	0.25	0.03	0.22	20.	*	*	2	0540	179	0.00	0.00	0.00	0.00	0.
1	0720	45	0.25	0.02	0.23	21.	*	*	2	0550	180	0.00	0.00	0.00	0.00	0.
1	0730	46	0.25	0.02	0.23	23.	*	*	2	0600	181	0.00	0.00	0.00	0.00	0.
1	0740	47	0.22	0.02	0.21	25.	*	*	2	0610	182	0.00	0.00	0.00	0.00	0.
1	0750	48	0.23	0.02	0.21	26.	*	*	2	0620	183	0.00	0.00	0.00	0.00	0.
1	0800	49	0.22	0.02	0.21	28.	*	*	2	0630	184	0.00	0.00	0.00	0.00	0.
1	0810	50	0.23	0.01	0.21	30.	*	*	2	0640	185	0.00	0.00	0.00	0.00	0.
1	0820	51	0.22	0.01	0.21	33.	*	*	2	0650	186	0.00	0.00	0.00	0.00	0.
1	0830	52	0.23	0.01	0.21	35.	*	*	2	0700	187	0.00	0.00	0.00	0.00	0.
1	0840	53	0.12	0.01	0.12	37.	*	*	2	0710	188	0.00	0.00	0.00	0.00	0.
1	0850	54	0.13	0.01	0.12	39.	*	*	2	0720	189	0.00	0.00	0.00	0.00	0.
1	0900	55	0.12	0.01	0.12	41.	*	*	2	0730	190	0.00	0.00	0.00	0.00	0.
1	0910	56	0.07	0.00	0.07	43.	*	*	2	0740	191	0.00	0.00	0.00	0.00	0.
1	0920	57	0.07	0.00	0.07	45.	*	*	2	0750	192	0.00	0.00	0.00	0.00	0.

1	0930	58	0.07	0.00	0.07	46.	*	2	0800	193	0.00	0.00	0.00	0.
1	0940	59	0.07	0.00	0.07	47.	*	2	0810	194	0.00	0.00	0.00	0.
1	0950	60	0.08	0.00	0.07	48.	*	2	0820	195	0.00	0.00	0.00	0.
1	1000	61	0.07	0.00	0.07	49.	*	2	0830	196	0.00	0.00	0.00	0.
1	1010	62	0.06	0.00	0.06	49.	*	2	0840	197	0.00	0.00	0.00	0.
1	1020	63	0.07	0.00	0.06	49.	*	2	0850	198	0.00	0.00	0.00	0.
1	1030	64	0.06	0.00	0.06	48.	*	2	0900	199	0.00	0.00	0.00	0.
1	1040	65	0.06	0.00	0.05	48.	*	2	0910	200	0.00	0.00	0.00	0.
1	1050	66	0.06	0.00	0.05	47.	*	2	0920	201	0.00	0.00	0.00	0.
1	1100	67	0.06	0.00	0.05	47.	*	2	0930	202	0.00	0.00	0.00	0.
1	1110	68	0.06	0.00	0.05	46.	*	2	0940	203	0.00	0.00	0.00	0.
1	1120	69	0.06	0.00	0.05	46.	*	2	0950	204	0.00	0.00	0.00	0.
1	1130	70	0.06	0.00	0.05	45.	*	2	1000	205	0.00	0.00	0.00	0.
1	1140	71	0.05	0.00	0.05	44.	*	2	1010	206	0.00	0.00	0.00	0.
1	1150	72	0.05	0.00	0.05	44.	*	2	1020	207	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	43.	*	2	1030	208	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	43.	*	2	1040	209	0.00	0.00	0.00	0.
1	1220	75	0.00	0.00	0.00	42.	*	2	1050	210	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	42.	*	2	1100	211	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	41.	*	2	1110	212	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	40.	*	2	1120	213	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	40.	*	2	1130	214	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	39.	*	2	1140	215	0.00	0.00	0.00	0.
1	1320	81	0.00	0.00	0.00	38.	*	2	1150	216	0.00	0.00	0.00	0.
1	1330	82	0.00	0.00	0.00	37.	*	2	1200	217	0.00	0.00	0.00	0.
1	1340	83	0.00	0.00	0.00	36.	*	2	1210	218	0.00	0.00	0.00	0.
1	1350	84	0.00	0.00	0.00	35.	*	2	1220	219	0.00	0.00	0.00	0.
1	1400	85	0.00	0.00	0.00	34.	*	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	33.	*	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	32.	*	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	31.	*	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	30.	*	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	29.	*	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	28.	*	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	28.	*	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	27.	*	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	26.	*	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	25.	*	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	25.	*	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	24.	*	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	23.	*	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	23.	*	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	22.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	22.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	21.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	20.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	20.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	19.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	19.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	18.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	18.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	17.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	16.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	16.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	15.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	15.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	14.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	14.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	13.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	13.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	13.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	12.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	12.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	11.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	11.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	10.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	10.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	10.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	9.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	9.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	8.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	8.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	8.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	7.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	7.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	7.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	6.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	6.	*	2	2050	270	0.00	0.00	0.00	0.

***** CUMULATIVE AREA = 0.12 SQ MI *****

93 KK * SUBB8 *
* * * * *

94 KO OUTPUT CONTROL VARIABLES

IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

95 BA SUBBASIN CHARACTERISTICS

TAREA 0.02 SUBBASIN AREA

PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI INCREMENTAL PRECIPITATION PATTERN

0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

96 LS SCS LOSS RATE

STRTL 0.44 INITIAL ABSTRACTION
CRVNBR 82.00 CURVE NUMBER
RTIMP 0.00 PERCENT IMPERVIOUS AREA

97 UI INPUT UNITGRAPH, 21 ORDINATES, VOLUME = 0.83

0.0	2.7	7.8	10.2	8.5	6.2	5.0	4.3	3.7	3.1
2.7	2.2	1.8	1.6	1.3	1.1	0.8	0.6	0.4	0.2
0.1									

HYDROGRAPH AT STATION SUBB8

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	*	*	1	2230	136	0.00	0.00	0.00	0.00	0.
1	0010	2	0.06	0.06	0.00	0.	*	*	1	2240	137	0.00	0.00	0.00	0.00	0.
1	0020	3	0.06	0.06	0.00	0.	*	*	1	2250	138	0.00	0.00	0.00	0.00	0.
1	0030	4	0.06	0.06	0.00	0.	*	*	1	2300	139	0.00	0.00	0.00	0.00	0.
1	0040	5	0.07	0.07	0.00	0.	*	*	1	2310	140	0.00	0.00	0.00	0.00	0.
1	0050	6	0.07	0.07	0.00	0.	*	*	1	2320	141	0.00	0.00	0.00	0.00	0.
1	0100	7	0.06	0.06	0.00	0.	*	*	1	2330	142	0.00	0.00	0.00	0.00	0.
1	0110	8	0.07	0.07	0.00	0.	*	*	1	2340	143	0.00	0.00	0.00	0.00	0.
1	0120	9	0.08	0.07	0.00	0.	*	*	1	2350	144	0.00	0.00	0.00	0.00	0.
1	0130	10	0.07	0.07	0.01	0.	*	*	2	0000	145	0.00	0.00	0.00	0.00	0.
1	0140	11	0.07	0.06	0.01	0.	*	*	2	0010	146	0.00	0.00	0.00	0.00	0.
1	0150	12	0.07	0.06	0.01	0.	*	*	2	0020	147	0.00	0.00	0.00	0.00	0.
1	0200	13	0.07	0.05	0.02	0.	*	*	2	0030	148	0.00	0.00	0.00	0.00	0.
1	0210	14	0.06	0.05	0.02	0.	*	*	2	0040	149	0.00	0.00	0.00	0.00	0.
1	0220	15	0.07	0.04	0.02	0.	*	*	2	0050	150	0.00	0.00	0.00	0.00	0.
1	0230	16	0.06	0.04	0.02	1.	*	*	2	0100	151	0.00	0.00	0.00	0.00	0.
1	0240	17	0.06	0.04	0.02	1.	*	*	2	0110	152	0.00	0.00	0.00	0.00	0.
1	0250	18	0.06	0.04	0.03	1.	*	*	2	0120	153	0.00	0.00	0.00	0.00	0.
1	0300	19	0.06	0.04	0.03	1.	*	*	2	0130	154	0.00	0.00	0.00	0.00	0.
1	0310	20	0.08	0.04	0.03	1.	*	*	2	0140	155	0.00	0.00	0.00	0.00	0.
1	0320	21	0.07	0.04	0.04	1.	*	*	2	0150	156	0.00	0.00	0.00	0.00	0.
1	0330	22	0.08	0.04	0.04	1.	*	*	2	0200	157	0.00	0.00	0.00	0.00	0.
1	0340	23	0.08	0.03	0.04	2.	*	*	2	0210	158	0.00	0.00	0.00	0.00	0.
1	0350	24	0.07	0.03	0.04	2.	*	*	2	0220	159	0.00	0.00	0.00	0.00	0.
1	0400	25	0.08	0.03	0.04	2.	*	*	2	0230	160	0.00	0.00	0.00	0.00	0.
1	0410	26	0.08	0.03	0.04	2.	*	*	2	0240	161	0.00	0.00	0.00	0.00	0.
1	0420	27	0.07	0.03	0.05	2.	*	*	2	0250	162	0.00	0.00	0.00	0.00	0.
1	0430	28	0.08	0.03	0.05	2.	*	*	2	0300	163	0.00	0.00	0.00	0.00	0.
1	0440	29	0.10	0.04	0.06	2.	*	*	2	0310	164	0.00	0.00	0.00	0.00	0.
1	0450	30	0.10	0.03	0.07	3.	*	*	2	0320	165	0.00	0.00	0.00	0.00	0.
1	0500	31	0.10	0.03	0.07	3.	*	*	2	0330	166	0.00	0.00	0.00	0.00	0.
1	0510	32	0.13	0.04	0.09	3.	*	*	2	0340	167	0.00	0.00	0.00	0.00	0.
1	0520	33	0.12	0.04	0.09	3.	*	*	2	0350	168	0.00	0.00	0.00	0.00	0.
1	0530	34	0.13	0.03	0.09	4.	*	*	2	0400	169	0.00	0.00	0.00	0.00	0.
1	0540	35	0.12	0.03	0.09	4.	*	*	2	0410	170	0.00	0.00	0.00	0.00	0.
1	0550	36	0.13	0.03	0.10	4.	*	*	2	0420	171	0.00	0.00	0.00	0.00	0.
1	0600	37	0.12	0.03	0.10	5.	*	*	2	0430	172	0.00	0.00	0.00	0.00	0.
1	0610	38	0.15	0.03	0.12	5.	*	*	2	0440	173	0.00	0.00	0.00	0.00	0.
1	0620	39	0.15	0.03	0.12	5.	*	*	2	0450	174	0.00	0.00	0.00	0.00	0.
1	0630	40	0.15	0.03	0.12	6.	*	*	2	0500	175	0.00	0.00	0.00	0.00	0.
1	0640	41	0.18	0.03	0.14	6.	*	*	2	0510	176	0.00	0.00	0.00	0.00	0.
1	0650	42	0.17	0.03	0.15	6.	*	*	2	0520	177	0.00	0.00	0.00	0.00	0.
1	0700	43	0.18	0.03	0.15	7.	*	*	2	0530	178	0.00	0.00	0.00	0.00	C.
1	0710	44	0.25	0.04	0.21	7.	*	*	2	0540	179	0.00	0.00	0.00	0.00	C.
1	0720	45	0.25	0.03	0.22	8.	*	*	2	0550	180	0.00	0.00	0.00	0.00	C.
1	0730	46	0.25	0.03	0.22	9.	*	*	2	0600	181	0.00	0.00	0.00	0.00	C.
1	0740	47	0.22	0.03	0.20	10.	*	*	2	0610	182	0.00	0.00	0.00	0.00	C.
1	0750	48	0.23	0.02	0.20	11.	*	*	2	0620	183	0.00	0.00	0.00	0.00	C.
1	0800	49	0.22	0.02	0.20	11.	*	*	2	0630	184	0.00	0.00	0.00	0.00	C.
1	0810	50	0.23	0.02	0.20	11.	*	*	2	0640	185	0.00	0.00	0.00	0.00	C.
1	0820	51	0.22	0.02	0.21	12.	*	*	2	0650	186	0.00	0.00	0.00	0.00	C.
1	0830	52	0.23	0.02	0.21	12.	*	*	2	0700	187	0.00	0.00	0.00	0.00	C.
1	0840	53	0.12	0.01	0.12	12.	*	*	2	0710	188	0.00	0.00	0.00	0.00	C.

1	0850	54	0.13	0.01	0.12	12.	*	2	0720	189	0.00	0.00	0.00	0.
1	0900	55	0.12	0.01	0.12	12.	*	2	0730	190	0.00	0.00	0.00	0.
1	0910	56	0.07	0.01	0.07	11.	*	2	0740	191	0.00	0.00	0.00	0.
1	0920	57	0.07	0.01	0.07	10.	*	2	0750	192	0.00	0.00	0.00	0.
1	0930	58	0.07	0.01	0.07	9.	*	2	0800	193	0.00	0.00	0.00	0.
1	0940	59	0.07	0.01	0.07	9.	*	2	0810	194	0.00	0.00	0.00	0.
1	0950	60	0.08	0.01	0.07	8.	*	2	0820	195	0.00	0.00	0.00	0.
1	1000	61	0.07	0.00	0.07	7.	*	2	0830	196	0.00	0.00	0.00	0.
1	1010	62	0.06	0.00	0.06	7.	*	2	0840	197	0.00	0.00	0.00	0.
1	1020	63	0.07	0.00	0.06	6.	*	2	0850	198	0.00	0.00	0.00	0.
1	1030	64	0.06	0.00	0.06	6.	*	2	0900	199	0.00	0.00	0.00	0.
1	1040	65	0.06	0.00	0.05	5.	*	2	0910	200	0.00	0.00	0.00	0.
1	1050	66	0.06	0.00	0.05	5.	*	2	0920	201	0.00	0.00	0.00	0.
1	1100	67	0.06	0.00	0.05	5.	*	2	0930	202	0.00	0.00	0.00	0.
1	1110	68	0.06	0.00	0.05	4.	*	2	0940	203	0.00	0.00	0.00	0.
1	1120	69	0.06	0.00	0.05	4.	*	2	0950	204	0.00	0.00	0.00	0.
1	1130	70	0.06	0.00	0.05	4.	*	2	1000	205	0.00	0.00	0.00	0.
1	1140	71	0.05	0.00	0.05	4.	*	2	1010	206	0.00	0.00	0.00	0.
1	1150	72	0.05	0.00	0.05	4.	*	2	1020	207	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	4.	*	2	1030	208	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	3.	*	2	1040	209	0.00	0.00	0.00	0.
1	1220	75	0.00	0.00	0.00	3.	*	2	1050	210	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	3.	*	2	1100	211	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	2.	*	2	1110	212	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	2.	*	2	1120	213	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	1.	*	2	1130	214	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	1.	*	2	1140	215	0.00	0.00	0.00	0.
1	1320	81	0.00	0.00	0.00	1.	*	2	1150	216	0.00	0.00	0.00	0.
1	1330	82	0.00	0.00	0.00	1.	*	2	1200	217	0.00	0.00	0.00	0.
1	1340	83	0.00	0.00	0.00	1.	*	2	1210	218	0.00	0.00	0.00	0.
1	1350	84	0.00	0.00	0.00	0.	*	2	1220	219	0.00	0.00	0.00	0.
1	1400	85	0.00	0.00	0.00	0.	*	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	0.	*	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	0.	*	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	0.	*	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	0.	*	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	0.	*	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	0.	*	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	0.	*	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	0.	*	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	0.	*	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	0.	*	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	0.	*	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	0.	*	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	0.	*	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	0.	*	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	0.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	0.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	0.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	0.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	0.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	0.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	0.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	0.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	0.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	0.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	0.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	0.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	0.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	0.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	0.	*	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 2.11, TOTAL EXCESS = 5.39
PEAK FLOW TIME MAXIMUM AVERAGE FLOW
6-HR 24-HR 72-HR 44.83-HR
+ (CFS) (HR) (CFS)
+ 12. 8.67 8. 2. 1. 1.
(INCHES) 3.569 4.472 4.472 4.472
(AC-FT) 4. 5. 5. 5.
CUMULATIVE AREA = 0.02 SQ MI

 102 KK * SUB9 *

103 KO OUTPUT CONTROL VARIABLES
 IPRNT 1 PRINT CONTROL
 IPLOT 0 PLOT CONTROL
 QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

104 BA SUBBASIN CHARACTERISTICS
 TAREA 0.03 SUBBASIN AREA

PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI INCREMENTAL PRECIPITATION PATTERN
 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01
 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01
 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01
 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02
 0.02 0.02 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03
 0.03 0.02 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01
 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01
 0.01 0.01

105 LS SCS LOSS RATE
 STRTL 0.35 INITIAL ABSTRACTION
 CRVNBR 85.00 CURVE NUMBER
 RTIMP 0.00 PERCENT IMPERVIOUS AREA

106 UI INPUT UNITGRAPH, 20 ORDINATES, VOLUME = 1.01
 0.0 4.7 13.5 19.2 16.8 11.9 9.4 7.9 6.6 5.6
 4.5 3.7 3.1 2.6 2.2 1.8 1.4 1.0 0.6 0.3

 HYDROGRAPH AT STATION SUB9

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP	Q
1	0000	1	0.00	0.00	0.00	0.	*	*	1	2230	136	0.00	0.00	0.00	0.00	0.00	0.
1	0010	2	0.06	0.06	0.00	0.	*	*	1	2240	137	0.00	0.00	0.00	0.00	0.00	0.
1	0020	3	0.06	0.06	0.00	0.	*	*	1	2250	138	0.00	0.00	0.00	0.00	0.00	0.
1	0030	4	0.06	0.06	0.00	0.	*	*	1	2300	139	0.00	0.00	0.00	0.00	0.00	0.
1	0040	5	0.07	0.07	0.00	0.	*	*	1	2310	140	0.00	0.00	0.00	0.00	0.00	0.
1	0050	6	0.07	0.07	0.00	0.	*	*	1	2320	141	0.00	0.00	0.00	0.00	0.00	0.
1	0100	7	0.06	0.06	0.00	0.	*	*	1	2330	142	0.00	0.00	0.00	0.00	0.00	0.
1	0110	8	0.07	0.07	0.00	0.	*	*	1	2340	143	0.00	0.00	0.00	0.00	0.00	0.
1	0120	9	0.08	0.06	0.01	0.	*	*	1	2350	144	0.00	0.00	0.00	0.00	0.00	0.
1	0130	10	0.07	0.06	0.02	0.	*	*	2	0000	145	0.00	0.00	0.00	0.00	0.00	0.
1	0140	11	0.07	0.05	0.02	0.	*	*	2	0010	146	0.00	0.00	0.00	0.00	0.00	0.
1	0150	12	0.07	0.05	0.02	1.	*	*	2	0020	147	0.00	0.00	0.00	0.00	0.00	0.
1	0200	13	0.07	0.05	0.02	1.	*	*	2	0030	148	0.00	0.00	0.00	0.00	0.00	0.
1	0210	14	0.06	0.04	0.03	1.	*	*	2	0040	149	0.00	0.00	0.00	0.00	0.00	0.
1	0220	15	0.07	0.04	0.03	1.	*	*	2	0050	150	0.00	0.00	0.00	0.00	0.00	0.
1	0230	16	0.06	0.04	0.03	2.	*	*	2	0100	151	0.00	0.00	0.00	0.00	0.00	0.
1	0240	17	0.06	0.03	0.03	2.	*	*	2	0110	152	0.00	0.00	0.00	0.00	0.00	0.
1	0250	18	0.06	0.03	0.03	2.	*	*	2	0120	153	0.00	0.00	0.00	0.00	0.00	0.
1	0300	19	0.06	0.03	0.03	3.	*	*	2	0130	154	0.00	0.00	0.00	0.00	0.00	0.
1	0310	20	0.08	0.03	0.04	3.	*	*	2	0140	155	0.00	0.00	0.00	0.00	0.00	0.
1	0320	21	0.07	0.03	0.04	3.	*	*	2	0150	156	0.00	0.00	0.00	0.00	0.00	0.
1	0330	22	0.08	0.03	0.05	3.	*	*	2	0200	157	0.00	0.00	0.00	0.00	0.00	0.
1	0340	23	0.08	0.03	0.05	4.	*	*	2	0210	158	0.00	0.00	0.00	0.00	0.00	0.
1	0350	24	0.07	0.03	0.05	4.	*	*	2	0220	159	0.00	0.00	0.00	0.00	0.00	0.
1	0400	25	0.08	0.03	0.05	4.	*	*	2	0230	160	0.00	0.00	0.00	0.00	0.00	0.
1	0410	26	0.08	0.02	0.05	5.	*	*	2	0240	161	0.00	0.00	0.00	0.00	0.00	0.
1	0420	27	0.07	0.02	0.05	5.	*	*	2	0250	162	0.00	0.00	0.00	0.00	0.00	0.
1	0430	28	0.08	0.02	0.05	5.	*	*	2	0300	163	0.00	0.00	0.00	0.00	0.00	0.
1	0440	29	0.10	0.03	0.07	5.	*	*	2	0310	164	0.00	0.00	0.00	0.00	0.00	0.
1	0450	30	0.10	0.03	0.07	6.	*	*	2	0320	165	0.00	0.00	0.00	0.00	0.00	0.
1	0500	31	0.10	0.02	0.08	6.	*	*	2	0330	166	0.00	0.00	0.00	0.00	0.00	0.
1	0510	32	0.13	0.03	0.10	6.	*	*	2	0340	167	0.00	0.00	0.00	0.00	0.00	0.
1	0520	33	0.12	0.03	0.10	7.	*	*	2	0350	168	0.00	0.00	0.00	0.00	0.00	0.
1	0530	34	0.13	0.03	0.10	8.	*	*	2	0400	169	0.00	0.00	0.00	0.00	0.00	0.
1	0540	35	0.12	0.02	0.10	8.	*	*	2	0410	170	0.00	0.00	0.00	0.00	0.00	0.
1	0550	36	0.13	0.02	0.10	9.	*	*	2	0420	171	0.00	0.00	0.00	0.00	0.00	0.
1	0600	37	0.12	0.02	0.10	10.	*	*	2	0430	172	0.00	0.00	0.00	0.00	0.00	0.
1	0610	38	0.15	0.02	0.13	10.	*	*	2	0440	173	0.00	0.00	0.00	0.00	0.00	0.
1	0620	39	0.15	0.02	0.13	11.	*	*	2	0450	174	0.00	0.00	0.00	0.00	0.00	0.
1	0630	40	0.15	0.02	0.13	11.	*	*	2	0500	175	0.00	0.00	0.00	0.00	0.00	0.
1	0640	41	0.18	0.02	0.15	12.	*	*	2	0510	176	0.00	0.00	0.00	0.00	0.00	0.
1	0650	42	0.17	0.02	0.15	13.	*	*	2	0520	177	0.00	0.00	0.00	0.00	0.00	0.
1	0700	43	0.18	0.02	0.16	14.	*	*	2	0530	178	0.00	0.00	0.00	0.00	0.00	0.
1	0710	44	0.25	0.03	0.22	14.	*	*	2	0540	179	0.00	0.00	0.00	0.00	0.00	0.
1	0720	45	0.25	0.02	0.23	16.	*	*	2	0550	180	0.00	0.00	0.00	0.00	0.00	0.
1	0730	46	0.25	0.02	0.23	17.	*	*	2	0600	181	0.00	0.00	0.00	0.00	0.00	0.
1	0740	47	0.22	0.02	0.21	19.	*	*	2	0610	182	0.00	0.00	0.00	0.00	0.00	0.
1	0750	48	0.23	0.02	0.21	20.	*	*	2	0620	183	0.00	0.00	0.00	0.00	0.00	0.
1	0800	49	0.22	0.02	0.21	21.	*	*	2	0630	184	0.00	0.00	0.00	0.00	0.00	0.
1	0810	50	0.23	0.01	0.21	22.	*	*	2	0640	185	0.00	0.00	0.00	0.00	0.00	0.

		TOTAL RAINFALL =	7.50	TOTAL LOSS =	1.77	TOTAL EXCESS =	5.73
		PEAK FLOW	TIME	6 HR	24 HR	MAXIMUM AVERAGE FLOW	44.83 HR
		(CFS)	(HR)	(CFS)	(INCHES)	(INCHES)	(AC-FT)
1	0820	0.22	0.01	0.21	0.21	0.00	0.00
1	0830	52	0.13	0.01	0.12	23.	*
1	0840	53	0.12	0.01	0.12	23.	*
1	0850	54	0.13	0.01	0.12	23.	*
1	0850	55	0.12	0.01	0.12	22.	*
1	0910	56	0.07	0.00	0.07	21.	*
1	0920	57	0.07	0.00	0.07	19.	*
1	0930	58	0.07	0.00	0.07	17.	*
1	0940	59	0.07	0.00	0.07	16.	*
1	0950	60	0.08	0.00	0.07	14.	*
1	1000	61	0.07	0.00	0.05	13.	*
1	1010	62	0.06	0.00	0.06	12.	*
1	1020	63	0.07	0.00	0.06	11.	*
1	1030	64	0.06	0.00	0.06	11.	*
1	1040	65	0.06	0.00	0.05	10.	*
1	1050	66	0.06	0.00	0.05	9.	*
1	1100	67	0.06	0.00	0.05	8.	*
1	1110	68	0.06	0.00	0.05	8.	*
1	1120	69	0.06	0.00	0.05	8.	*
1	1130	70	0.06	0.00	0.05	7.	*
1	1140	71	0.05	0.00	0.05	7.	*
1	1150	72	0.05	0.00	0.05	7.	*
1	1200	73	0.05	0.00	0.05	6.	*
1	1210	74	0.00	0.00	0.00	6.	*
1	1220	75	0.00	0.00	0.00	6.	*
1	1230	76	0.00	0.00	0.00	6.	*
1	1240	77	0.00	0.00	0.00	5.	*
1	1250	78	0.00	0.00	0.00	3.	*
1	1300	79	0.00	0.00	0.00	3.	*
1	1310	80	0.00	0.00	0.00	2.	*
1	1320	81	0.00	0.00	0.00	2.	*
1	1330	82	0.00	0.00	0.00	2.	*
1	1340	83	0.00	0.00	0.00	1.	*
1	1350	84	0.00	0.00	0.00	1.	*
1	1400	85	0.00	0.00	0.00	1.	*
1	1410	86	0.00	0.00	0.00	0.	*
1	1420	87	0.00	0.00	0.00	0.	*
1	1430	88	0.00	0.00	0.00	0.	*
1	1440	89	0.00	0.00	0.00	0.	*
1	1450	90	0.00	0.00	0.00	0.	*
1	1500	91	0.00	0.00	0.00	0.	*
1	1510	92	0.00	0.00	0.00	0.	*
1	1520	93	0.00	0.00	0.00	0.	*
1	1530	94	0.00	0.00	0.00	0.	*
1	1540	95	0.00	0.00	0.00	0.	*
1	1550	96	0.00	0.00	0.00	0.	*
1	1600	97	0.00	0.00	0.00	0.	*
1	1610	98	0.00	0.00	0.00	0.	*
1	1620	99	0.00	0.00	0.00	0.	*
1	1630	100	0.00	0.00	0.00	0.	*
1	1640	101	0.00	0.00	0.00	0.	*
1	1650	102	0.00	0.00	0.00	0.	*
1	1700	103	0.00	0.00	0.00	0.	*
1	1710	104	0.00	0.00	0.00	0.	*
1	1720	105	0.00	0.00	0.00	0.	*
1	1730	106	0.00	0.00	0.00	0.	*
1	1740	107	0.00	0.00	0.00	0.	*
1	1750	108	0.00	0.00	0.00	0.	*
1	1800	109	0.00	0.00	0.00	0.	*
1	1810	110	0.00	0.00	0.00	0.	*
1	1820	111	0.00	0.00	0.00	0.	*
1	1830	112	0.00	0.00	0.00	0.	*
1	1840	113	0.00	0.00	0.00	0.	*
1	1850	114	0.00	0.00	0.00	0.	*
1	1900	115	0.00	0.00	0.00	0.	*
1	1910	116	0.00	0.00	0.00	0.	*
1	1920	117	0.00	0.00	0.00	0.	*
1	1930	118	0.00	0.00	0.00	0.	*
1	1940	119	0.00	0.00	0.00	0.	*
1	1950	120	0.00	0.00	0.00	0.	*
1	2000	121	0.00	0.00	0.00	0.	*
1	2010	122	0.00	0.00	0.00	0.	*
1	2110	128	0.00	0.00	0.00	0.	*
1	2120	129	0.00	0.00	0.00	0.	*
1	2130	130	0.00	0.00	0.00	0.	*
1	2140	131	0.00	0.00	0.00	0.	*
1	2150	132	0.00	0.00	0.00	0.	*
1	2200	133	0.00	0.00	0.00	0.	*
1	2210	134	0.00	0.00	0.00	0.	*
1	2220	135	0.00	0.00	0.00	0.	*

PEAK FLOW
+ (CFS)
* 23. 8.67
PEAK FLOW
TIME
6 HR
(HR)
(CFS)
(INCHES)
(AC-FT)

MAXIMUM AVERAGE FLOW
24 HR
72 HR
44.83 HR

CUMULATIVE AREA = 0.C3 SQ MI

5.763
9.
9.

110 KK BORROW

111 KO OUTPUT CONTROL VARIABLES

 IPRNT 1 PRINT CONTROL
 IPLOT 0 PLOT CONTROL
 QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

112 BA SUBBASIN CHARACTERISTICS

 TAREA 0.13 SUBBASIN AREA

PRECIPITATION DATA

10 PB STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI INCREMENTAL PRECIPITATION PATTERN

0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

113 LS SCS LOSS RATE

 STRL 0.00 INITIAL ABSTRACTION

 CRVNBR 100.00 CURVE NUMBER

 RTIMP 0.00 PERCENT IMPERVIOUS AREA

114 UI INPUT UNITGRAPH, 38 ORDINATES, VOLUME = 1.19

0.0	6.5	13.1	25.1	37.7	49.0	51.5	49.1	44.1	35.0
30.8	27.1	24.3	22.1	20.0	18.2	16.5	15.0	13.6	11.9
10.6	9.7	8.8	8.1	7.3	6.7	6.0	5.4	4.8	4.3
3.7	3.2	2.7	2.2	1.7	1.2	0.7	0.2		

HYDROGRAPH AT STATION BORROW

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	*	*	1	2230	136	0.00	0.00	0.00	0.00	0.
1	0010	2	0.06	0.00	0.06	0.	*	*	1	2240	137	0.00	0.00	0.00	0.00	0.
1	0020	3	0.06	0.00	0.06	0.	*	*	1	2250	138	0.00	0.00	0.00	0.00	0.
1	0030	4	0.06	0.00	0.06	1.	*	*	1	2300	139	0.00	0.00	0.00	0.00	0.
1	0040	5	0.07	0.00	0.07	3.	*	*	1	2310	140	0.00	0.00	0.00	0.00	0.
1	0050	6	0.07	0.00	0.07	5.	*	*	1	2320	141	0.00	0.00	0.00	0.00	0.
1	0100	7	0.06	0.00	0.06	8.	*	*	1	2330	142	0.00	0.00	0.00	0.00	0.
1	0110	8	0.07	0.00	0.07	11.	*	*	1	2340	143	0.00	0.00	0.00	0.00	0.
1	0120	9	0.08	0.00	0.07	14.	*	*	1	2350	144	0.00	0.00	0.00	0.00	0.
1	0130	10	0.07	0.00	0.07	17.	*	*	2	0000	145	0.00	0.00	0.00	0.00	0.
1	0140	11	0.07	0.00	0.07	20.	*	*	2	0010	146	0.00	0.00	0.00	0.00	0.
1	0150	12	0.07	0.00	0.07	22.	*	*	2	0020	147	0.00	0.00	0.00	0.00	0.
1	0200	13	0.07	0.00	0.07	25.	*	*	2	0030	148	0.00	0.00	0.00	0.00	0.
1	0210	14	0.06	0.00	0.06	27.	*	*	2	0040	149	0.00	0.00	0.00	0.00	0.
1	0220	15	0.07	0.00	0.07	29.	*	*	2	0050	150	0.00	0.00	0.00	0.00	0.
1	0230	16	0.06	0.00	0.06	30.	*	*	2	0100	151	0.00	0.00	0.00	0.00	0.
1	0240	17	0.06	0.00	0.06	31.	*	*	2	0110	152	0.00	0.00	0.00	0.00	0.
1	0250	18	0.06	0.00	0.06	32.	*	*	2	0120	153	0.00	0.00	0.00	0.00	0.
1	0300	19	0.06	0.00	0.06	33.	*	*	2	0130	154	0.00	0.00	0.00	0.00	0.
1	0310	20	0.08	0.00	0.08	34.	*	*	2	0140	155	0.00	0.00	0.00	0.00	0.
1	0320	21	0.07	0.00	0.07	34.	*	*	2	0150	156	0.00	0.00	0.00	0.00	0.
1	0330	22	0.08	0.00	0.08	35.	*	*	2	0200	157	0.00	0.00	0.00	0.00	0.
1	0340	23	0.08	0.00	0.08	36.	*	*	2	0210	158	0.00	0.00	0.00	0.00	0.
1	0350	24	0.07	0.00	0.07	37.	*	*	2	0220	159	0.00	0.00	0.00	0.00	0.
1	0400	25	0.08	0.00	0.08	38.	*	*	2	0230	160	0.00	0.00	0.00	0.00	0.
1	0410	26	0.08	0.00	0.08	39.	*	*	2	0240	161	0.00	0.00	0.00	0.00	0.
1	0420	27	0.07	0.00	0.07	39.	*	*	2	0250	162	0.00	0.00	0.00	0.00	0.
1	0430	28	0.08	0.00	0.08	40.	*	*	2	0300	163	0.00	0.00	0.00	0.00	0.
1	0440	29	0.10	0.00	0.10	41.	*	*	2	0310	164	0.00	0.00	0.00	0.00	0.
1	0450	30	0.10	0.00	0.10	42.	*	*	2	0320	165	0.00	0.00	0.00	0.00	0.
1	0500	31	0.10	0.00	0.10	42.	*	*	2	0330	166	0.00	0.00	0.00	0.00	0.
1	0510	32	0.13	0.00	0.13	43.	*	*	2	0340	167	0.00	0.00	0.00	0.00	0.
1	0520	33	0.12	0.00	0.13	45.	*	*	2	0350	168	0.00	0.00	0.00	0.00	0.
1	0530	34	0.13	0.00	0.13	47.	*	*	2	0400	169	0.00	0.00	0.00	0.00	0.
1	0540	35	0.12	0.00	0.13	49.	*	*	2	0410	170	0.00	0.00	0.00	0.00	0.
1	0550	36	0.13	0.00	0.13	52.	*	*	2	0420	171	0.00	0.00	0.00	0.00	0.
1	0600	37	0.12	0.00	0.13	54.	*	*	2	0430	172	0.00	0.00	0.00	0.00	0.
1	0610	38	0.15	0.00	0.15	56.	*	*	2	0440	173	0.00	0.00	0.00	0.00	0.
1	0620	39	0.15	0.00	0.15	59.	*	*	2	0450	174	0.00	0.00	0.00	0.00	0.
1	0630	40	0.15	0.00	0.15	61.	*	*	2	0500	175	0.00	0.00	0.00	0.00	0.
1	0640	41	0.18	0.00	0.17	63.	*	*	2	0510	176	0.00	0.00	0.00	0.00	0.
1	0650	42	0.17	0.00	0.17	66.	*	*	2	0520	177	0.00	0.00	0.00	0.00	0.
1	0700	43	0.18	0.00	0.17	68.	*	*	2	0530	178	0.00	0.00	0.00	0.00	0.
1	0710	44	0.25	0.00	0.25	71.	*	*	2	0540	179	0.00	0.00	0.00	0.00	0.
1	0720	45	0.25	0.00	0.25	75.	*	*	2	0550	180	0.00	0.00	0.00	0.00	0.

1	0730	46	0.25	0.00	0.25	79.	*	2	0600	181	0.00	0.00	0.00	0.
1	0740	47	0.22	0.00	0.22	84.	*	2	0610	182	0.00	0.00	0.00	0.
1	0750	48	0.23	0.00	0.23	90.	*	2	0620	183	0.00	0.00	0.00	0.
1	0800	49	0.22	0.00	0.22	95.	*	2	0630	184	0.00	0.00	0.00	0.
1	0810	50	0.23	0.00	0.23	101.	*	2	0640	185	0.00	0.00	0.00	0.
1	0820	51	0.22	0.00	0.22	105.	*	2	0650	186	0.00	0.00	0.00	0.
1	0830	52	0.23	0.00	0.23	109.	*	2	0700	187	0.00	0.00	0.00	0.
1	0840	53	0.12	0.00	0.13	112.	*	2	0710	188	0.00	0.00	0.00	0.
1	0850	54	0.13	0.00	0.13	114.	*	2	0720	189	0.00	0.00	0.00	0.
1	0900	55	0.12	0.00	0.13	115.	*	2	0730	190	0.00	0.00	0.00	0.
1	0910	56	0.07	0.00	0.07	114.	*	2	0740	191	0.00	0.00	0.00	0.
1	0920	57	0.07	0.00	0.07	112.	*	2	0750	192	0.00	0.00	0.00	0.
1	0930	58	0.07	0.00	0.07	108.	*	2	0800	193	0.00	0.00	0.00	0.
1	0940	59	0.07	0.00	0.07	103.	*	2	0810	194	0.00	0.00	0.00	0.
1	0950	60	0.08	0.00	0.08	98.	*	2	0820	195	0.00	0.00	0.00	0.
1	1000	61	0.07	0.00	0.07	92.	*	2	0830	196	0.00	0.00	0.00	0.
1	1010	62	0.06	0.00	0.06	87.	*	2	0840	197	0.00	0.00	0.00	0.
1	1020	63	0.07	0.00	0.07	83.	*	2	0850	198	0.00	0.00	0.00	0.
1	1030	64	0.06	0.00	0.06	79.	*	2	0900	199	0.00	0.00	0.00	0.
1	1040	65	0.06	0.00	0.05	75.	*	2	0910	200	0.00	0.00	0.00	0.
1	1050	66	0.06	0.00	0.05	71.	*	2	0920	201	0.00	0.00	0.00	0.
1	1100	67	0.06	0.00	0.05	68.	*	2	0930	202	0.00	0.00	0.00	0.
1	1110	68	0.06	0.00	0.05	65.	*	2	0940	203	0.00	0.00	0.00	0.
1	1120	69	0.06	0.00	0.05	62.	*	2	0950	204	0.00	0.00	0.00	0.
1	1130	70	0.06	0.00	0.05	59.	*	2	1000	205	0.00	0.00	0.00	0.
1	1140	71	0.05	0.00	0.05	56.	*	2	1010	206	0.00	0.00	0.00	0.
1	1150	72	0.05	0.00	0.05	53.	*	2	1020	207	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	51.	*	2	1030	208	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	49.	*	2	1040	209	0.00	0.00	0.00	0.
1	1220	75	0.00	0.00	0.00	47.	*	2	1050	210	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	44.	*	2	1100	211	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	41.	*	2	1110	212	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	37.	*	2	1120	213	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	33.	*	2	1130	214	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	29.	*	2	1140	215	0.00	0.00	0.00	0.
1	1320	81	0.00	0.00	0.00	26.	*	2	1150	216	0.00	0.00	0.00	0.
1	1330	82	0.00	0.00	0.00	22.	*	2	1200	217	0.00	0.00	0.00	0.
1	1340	83	0.00	0.00	0.00	19.	*	2	1210	218	0.00	0.00	0.00	0.
1	1350	84	0.00	0.00	0.00	17.	*	2	1220	219	0.00	0.00	0.00	0.
1	1400	85	0.00	0.00	0.00	15.	*	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	13.	*	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	11.	*	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	10.	*	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	9.	*	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	7.	*	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	7.	*	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	6.	*	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	5.	*	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	4.	*	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	4.	*	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	3.	*	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	3.	*	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	2.	*	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	2.	*	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	2.	*	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	1.	*	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	1.	*	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	1.	*	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	1.	*	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	0.	*	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	0.	*	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	0.	*	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	0.	*	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	0.	*	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	0.	*	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	0.	*	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	0.	*	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	0.	*	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	*	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	*	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	*	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	*	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	*	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	*	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	*	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	*	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	*	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	*	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	*	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	*	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	*	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	*	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	*	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	*	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	*	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	*	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	*	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	*	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	*	2	2040	269	0.00	0.00	0.00	0.
1	2220	135	0.00	0.00	0.00	0.	*	2	2050	270	0.00	0.00	0.00	0.

TOTAL RAINFALL = 7.50, TOTAL LOSS = 0.00, TOTAL EXCESS = 7.50

PEAK FLOW + (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	44.83-HR
115.	9.00	82.	31.	17.	17.
		(INCHES)	5.881	8.909	8.909

(AC-FT) 41. 62. 62. 62.
CUMULATIVE AREA = 0.13 SQ MI

118 KK

• SUB10 •

119 KO

OUTPUT CONTROL VARIABLES

IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

SUBBASIN RUNOFF DATA

120 BA

SUBBASIN CHARACTERISTICS
TAREA 0.17 SUBBASIN AREA

PRECIPITATION DATA

10 PB

STORM 7.50 BASIN TOTAL PRECIPITATION

12 PI

INCREMENTAL PRECIPITATION PATTERN

0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

121 LS

SCS LOSS RATE

STRNL 0.63 INITIAL ABSTRACTION
CRVNBR 76.00 CURVE NUMBER
RTIMP 0.00 PERCENT IMPERVIOUS AREA

122 UI

INPUT UNITGRAPH, 48 ORDINATES, VOLUME = 1.16

0.0	5.4	10.7	18.5	28.2	38.9	48.5	51.6	50.6	47.8
43.5	35.6	32.3	29.4	26.7	24.6	22.8	21.2	19.6	18.2
16.9	15.7	14.6	13.5	12.2	11.1	10.3	9.5	8.9	8.3
7.7	7.1	6.6	6.1	5.6	5.1	4.7	4.2	3.8	3.3
2.9	2.5	2.1	1.7	1.3	0.9	0.5	0.1		

HYDROGRAPH AT STATION SUB10

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	0000	1	0.00	0.00	0.00	0.	.	*	1	2230	136	0.00	0.00	0.00	0.	.
1	0010	2	0.06	0.06	0.00	0.	.	*	1	2240	137	0.00	0.00	0.00	0.	.
1	0020	3	0.06	0.06	0.00	0.	.	*	1	2250	138	0.00	0.00	0.00	0.	.
1	0030	4	0.06	0.06	0.00	0.	.	*	1	2300	139	0.00	0.00	0.00	0.	.
1	0040	5	0.07	0.07	0.00	0.	.	*	1	2310	140	0.00	0.00	0.00	0.	.
1	0050	6	0.07	0.07	0.00	0.	.	*	1	2320	141	0.00	0.00	0.00	0.	.
1	0100	7	0.06	0.06	0.00	0.	.	*	1	2330	142	0.00	0.00	0.00	0.	.
1	0110	8	0.07	0.07	0.00	0.	.	*	1	2340	143	0.00	0.00	0.00	0.	.
1	0120	9	0.08	0.08	0.00	0.	.	*	1	2350	144	0.00	0.00	0.00	0.	.
1	0130	10	0.07	0.07	0.00	0.	.	*	2	0000	145	0.00	0.00	0.00	0.	.
1	0140	11	0.07	0.07	0.00	0.	.	*	2	0010	146	0.00	0.00	0.00	0.	.
1	0150	12	0.07	0.07	0.00	0.	.	*	2	0020	147	0.00	0.00	0.00	0.	.
1	0200	13	0.07	0.06	0.01	0.	.	*	2	0030	148	0.00	0.00	0.00	0.	.
1	0210	14	0.06	0.06	0.01	0.	.	*	2	0040	149	0.00	0.00	0.00	0.	.
1	0220	15	0.07	0.05	0.01	0.	.	*	2	0050	150	0.00	0.00	0.00	0.	.
1	0230	16	0.06	0.05	0.01	0.	.	*	2	0100	151	0.00	0.00	0.00	0.	.
1	0240	17	0.06	0.05	0.01	1.	.	*	2	0110	152	0.00	0.00	0.00	0.	.
1	0250	18	0.06	0.05	0.02	1.	.	*	2	0120	153	0.00	0.00	0.00	0.	.
1	0300	19	0.06	0.05	0.02	2.	.	*	2	0130	154	0.00	0.00	0.00	0.	.
1	0310	20	0.08	0.05	0.02	2.	.	*	2	0140	155	0.00	0.00	0.00	0.	.
1	0320	21	0.07	0.05	0.02	3.	.	*	2	0150	156	0.00	0.00	0.00	0.	.
1	0330	22	0.08	0.05	0.03	4.	.	*	2	0200	157	0.00	0.00	0.00	0.	.
1	0340	23	0.08	0.05	0.03	4.	.	*	2	0210	158	0.00	0.00	0.00	0.	.
1	0350	24	0.07	0.05	0.03	5.	.	*	2	0220	159	0.00	0.00	0.00	0.	.
1	0400	25	0.08	0.04	0.03	6.	.	*	2	0230	160	0.00	0.00	0.00	0.	.
1	0410	26	0.08	0.04	0.03	8.	.	*	2	0240	161	0.00	0.00	0.00	0.	.
1	0420	27	0.07	0.04	0.03	9.	.	*	2	0250	162	0.00	0.00	0.00	0.	.
1	0430	28	0.08	0.04	0.04	10.	.	*	2	0300	163	0.00	0.00	0.00	0.	.
1	0440	29	0.10	0.05	0.05	11.	.	*	2	0310	164	0.00	0.00	0.00	0.	.
1	0450	30	0.10	0.05	0.05	12.	.	*	2	0320	165	0.00	0.00	0.00	0.	.
1	0500	31	0.10	0.05	0.05	14.	.	*	2	0330	166	0.00	0.00	0.00	0.	.
1	0510	32	0.13	0.05	0.07	15.	.	*	2	0340	167	0.00	0.00	0.00	0.	.
1	0520	33	0.12	0.05	0.07	17.	.	*	2	0350	168	0.00	0.00	0.00	0.	.
1	0530	34	0.13	0.05	0.08	18.	.	*	2	0400	169	0.00	0.00	0.00	0.	.
1	0540	35	0.12	0.05	0.08	21.	.	*	2	0410	170	0.00	0.00	0.00	0.	.
1	0550	36	0.13	0.04	0.08	23.	.	*	2	0420	171	0.00	0.00	0.00	0.	.
1	0600	37	0.12	0.04	0.08	25.	.	*	2	0430	172	0.00	0.00	0.00	0.	.
1	0610	38	0.15	0.05	0.10	28.	.	*	2	0440	173	0.00	0.00	0.00	0.	.
1	0620	39	0.15	0.05	0.10	31.	.	*	2	0450	174	0.00	0.00	0.00	0.	.

1	0630	40	0.15	0.04	0.11	34.	.	2	0500	175	0.00	0.00	0.00	0.
1	0640	41	0.18	0.05	0.13	36.	.	2	0510	176	0.00	0.00	0.00	0.
1	0650	42	0.17	0.05	0.13	39.	.	2	0520	177	0.00	0.00	0.00	0.
1	0700	43	0.18	0.04	0.13	43.	.	2	0530	178	0.00	0.00	0.00	0.
1	0710	44	0.25	0.06	0.19	46.	.	2	0540	179	0.00	0.00	0.00	0.
1	0720	45	0.25	0.05	0.20	50.	.	2	0550	180	0.00	0.00	0.00	0.
1	0730	46	0.25	0.05	0.20	55.	.	2	0600	181	0.00	0.00	0.00	0.
1	0740	47	0.22	0.04	0.18	60.	.	2	0610	182	0.00	0.00	0.00	0.
1	0750	48	0.23	0.04	0.19	65.	.	2	0620	183	0.00	0.00	0.00	0.
1	0800	49	0.22	0.04	0.19	71.	.	2	0630	184	0.00	0.00	0.00	0.
1	0810	50	0.23	0.04	0.19	77.	.	2	0640	185	0.00	0.00	0.00	0.
1	0820	51	0.22	0.03	0.19	83.	.	2	0650	186	0.00	0.00	0.00	0.
1	0830	52	0.23	0.03	0.19	89.	.	2	0700	187	0.00	0.00	0.00	0.
1	0840	53	0.12	0.02	0.11	94.	.	2	0710	188	0.00	0.00	0.00	0.
1	0850	54	0.13	0.02	0.11	98.	.	2	0720	189	0.00	0.00	0.00	0.
1	0900	55	0.12	0.02	0.11	101.	.	2	0730	190	0.00	0.00	0.00	0.
1	0910	56	0.07	0.01	0.07	103.	.	2	0740	191	0.00	0.00	0.00	0.
1	0920	57	0.07	0.01	0.07	104.	.	2	0750	192	0.00	0.00	0.00	0.
1	0930	58	0.07	0.01	0.07	104.	.	2	0800	193	0.00	0.00	0.00	0.
1	0940	59	0.07	0.01	0.07	102.	.	2	0810	194	0.00	0.00	0.00	0.
1	0950	60	0.08	0.01	0.07	99.	.	2	0820	195	0.00	0.00	0.00	0.
1	1000	61	0.07	0.01	0.07	96.	.	2	0830	196	0.00	0.00	0.00	0.
1	1010	62	0.06	0.01	0.06	92.	.	2	0840	197	0.00	0.00	0.00	0.
1	1020	63	0.07	0.01	0.06	88.	.	2	0850	198	0.00	0.00	0.00	0.
1	1030	64	0.06	0.01	0.06	85.	.	2	0900	199	0.00	0.00	0.00	0.
1	1040	65	0.06	0.01	0.05	82.	.	2	0910	200	0.00	0.00	0.00	0.
1	1050	66	0.06	0.01	0.05	79.	.	2	0920	201	0.00	0.00	0.00	0.
1	1100	67	0.06	0.01	0.05	77.	.	2	0930	202	0.00	0.00	0.00	0.
1	1110	68	0.06	0.01	0.05	74.	.	2	0940	203	0.00	0.00	0.00	0.
1	1120	69	0.06	0.01	0.05	72.	.	2	0950	204	0.00	0.00	0.00	0.
1	1130	70	0.06	0.01	0.05	69.	.	2	1000	205	0.00	0.00	0.00	0.
1	1140	71	0.05	0.01	0.04	67.	.	2	1010	206	0.00	0.00	0.00	0.
1	1150	72	0.05	0.01	0.04	64.	.	2	1020	207	0.00	0.00	0.00	0.
1	1200	73	0.05	0.00	0.05	62.	.	2	1030	208	0.00	0.00	0.00	0.
1	1210	74	0.00	0.00	0.00	60.	.	2	1040	209	0.00	0.00	0.00	0.
1	1220	75	0.00	0.00	0.00	58.	.	2	1050	210	0.00	0.00	0.00	0.
1	1230	76	0.00	0.00	0.00	56.	.	2	1100	211	0.00	0.00	0.00	0.
1	1240	77	0.00	0.00	0.00	53.	.	2	1110	212	0.00	0.00	0.00	0.
1	1250	78	0.00	0.00	0.00	50.	.	2	1120	213	0.00	0.00	0.00	0.
1	1300	79	0.00	0.00	0.00	47.	.	2	1130	214	0.00	0.00	0.00	0.
1	1310	80	0.00	0.00	0.00	43.	.	2	1140	215	0.00	0.00	0.00	0.
1	1320	81	0.00	0.00	0.00	40.	.	2	1150	216	0.00	0.00	0.00	0.
1	1330	82	0.00	0.00	0.00	36.	.	2	1200	217	0.00	0.00	0.00	0.
1	1340	83	0.00	0.00	0.00	33.	.	2	1210	218	0.00	0.00	0.00	0.
1	1350	84	0.00	0.00	0.00	30.	.	2	1220	219	0.00	0.00	0.00	0.
1	1400	85	0.00	0.00	0.00	27.	.	2	1230	220	0.00	0.00	0.00	0.
1	1410	86	0.00	0.00	0.00	25.	.	2	1240	221	0.00	0.00	0.00	0.
1	1420	87	0.00	0.00	0.00	22.	.	2	1250	222	0.00	0.00	0.00	0.
1	1430	88	0.00	0.00	0.00	20.	.	2	1300	223	0.00	0.00	0.00	0.
1	1440	89	0.00	0.00	0.00	18.	.	2	1310	224	0.00	0.00	0.00	0.
1	1450	90	0.00	0.00	0.00	16.	.	2	1320	225	0.00	0.00	0.00	0.
1	1500	91	0.00	0.00	0.00	15.	.	2	1330	226	0.00	0.00	0.00	0.
1	1510	92	0.00	0.00	0.00	13.	.	2	1340	227	0.00	0.00	0.00	0.
1	1520	93	0.00	0.00	0.00	12.	.	2	1350	228	0.00	0.00	0.00	0.
1	1530	94	0.00	0.00	0.00	10.	.	2	1400	229	0.00	0.00	0.00	0.
1	1540	95	0.00	0.00	0.00	9.	.	2	1410	230	0.00	0.00	0.00	0.
1	1550	96	0.00	0.00	0.00	8.	.	2	1420	231	0.00	0.00	0.00	0.
1	1600	97	0.00	0.00	0.00	7.	.	2	1430	232	0.00	0.00	0.00	0.
1	1610	98	0.00	0.00	0.00	6.	.	2	1440	233	0.00	0.00	0.00	0.
1	1620	99	0.00	0.00	0.00	6.	.	2	1450	234	0.00	0.00	0.00	0.
1	1630	100	0.00	0.00	0.00	5.	.	2	1500	235	0.00	0.00	0.00	0.
1	1640	101	0.00	0.00	0.00	4.	.	2	1510	236	0.00	0.00	0.00	0.
1	1650	102	0.00	0.00	0.00	4.	.	2	1520	237	0.00	0.00	0.00	0.
1	1700	103	0.00	0.00	0.00	3.	.	2	1530	238	0.00	0.00	0.00	0.
1	1710	104	0.00	0.00	0.00	3.	.	2	1540	239	0.00	0.00	0.00	0.
1	1720	105	0.00	0.00	0.00	3.	.	2	1550	240	0.00	0.00	0.00	0.
1	1730	106	0.00	0.00	0.00	2.	.	2	1600	241	0.00	0.00	0.00	0.
1	1740	107	0.00	0.00	0.00	2.	.	2	1610	242	0.00	0.00	0.00	0.
1	1750	108	0.00	0.00	0.00	2.	.	2	1620	243	0.00	0.00	0.00	0.
1	1800	109	0.00	0.00	0.00	1.	.	2	1630	244	0.00	0.00	0.00	0.
1	1810	110	0.00	0.00	0.00	1.	.	2	1640	245	0.00	0.00	0.00	0.
1	1820	111	0.00	0.00	0.00	1.	.	2	1650	246	0.00	0.00	0.00	0.
1	1830	112	0.00	0.00	0.00	1.	.	2	1700	247	0.00	0.00	0.00	0.
1	1840	113	0.00	0.00	0.00	1.	.	2	1710	248	0.00	0.00	0.00	0.
1	1850	114	0.00	0.00	0.00	0.	.	2	1720	249	0.00	0.00	0.00	0.
1	1900	115	0.00	0.00	0.00	0.	.	2	1730	250	0.00	0.00	0.00	0.
1	1910	116	0.00	0.00	0.00	0.	.	2	1740	251	0.00	0.00	0.00	0.
1	1920	117	0.00	0.00	0.00	0.	.	2	1750	252	0.00	0.00	0.00	0.
1	1930	118	0.00	0.00	0.00	0.	.	2	1800	253	0.00	0.00	0.00	0.
1	1940	119	0.00	0.00	0.00	0.	.	2	1810	254	0.00	0.00	0.00	0.
1	1950	120	0.00	0.00	0.00	0.	.	2	1820	255	0.00	0.00	0.00	0.
1	2000	121	0.00	0.00	0.00	0.	.	2	1830	256	0.00	0.00	0.00	0.
1	2010	122	0.00	0.00	0.00	0.	.	2	1840	257	0.00	0.00	0.00	0.
1	2020	123	0.00	0.00	0.00	0.	.	2	1850	258	0.00	0.00	0.00	0.
1	2030	124	0.00	0.00	0.00	0.	.	2	1900	259	0.00	0.00	0.00	0.
1	2040	125	0.00	0.00	0.00	0.	.	2	1910	260	0.00	0.00	0.00	0.
1	2050	126	0.00	0.00	0.00	0.	.	2	1920	261	0.00	0.00	0.00	0.
1	2100	127	0.00	0.00	0.00	0.	.	2	1930	262	0.00	0.00	0.00	0.
1	2110	128	0.00	0.00	0.00	0.	.	2	1940	263	0.00	0.00	0.00	0.
1	2120	129	0.00	0.00	0.00	0.	.	2	1950	264	0.00	0.00	0.00	0.
1	2130	130	0.00	0.00	0.00	0.	.	2	2000	265	0.00	0.00	0.00	0.
1	2140	131	0.00	0.00	0.00	0.	.	2	2010	266	0.00	0.00	0.00	0.
1	2150	132	0.00	0.00	0.00	0.	.	2	2020	267	0.00	0.00	0.00	0.
1	2200	133	0.00	0.00	0.00	0.	.	2	2030	268	0.00	0.00	0.00	0.
1	2210	134	0.00	0.00	0.00	0.	.	2	2040	26				

PEAK FLOW + (CFS)	TIME (HR)		MAXIMUM FLOW 6-HR (CFS) 76. (INCHES) 4.149 (AC-FT) 38.	AVERAGE FLOW 24-HR 5.442 49.	72-HR 5.442 49.	44.83-HR
+ 104.	9.33					
		CUMULATIVE AREA =	0.17 SQ MI			

1

RUNOFF SUMMARY FLOW IN CUBIC FEET PER SECOND TIME IN HOURS, AREA IN SQUARE MILES									
+ OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
+ HYDROGRAPH AT	SUB1	69.	9.17	50.	18.	9.	0.11		
+ HYDROGRAPH AT	SUB2	79.	9.17	54.	18.	9.	0.13		
+ 2 COMBINED AT	JUDITH	147.	9.17	105.	35.	19.	0.24		
+ HYDROGRAPH AT	SUB3	58.	10.00	48.	20.	10.	0.16		
+ 2 COMBINED AT	CAH	200.	9.33	150.	55.	29.	0.40		
+ HYDROGRAPH AT	SUB4	29.	8.67	18.	5.	3.	0.06		
+ 2 COMBINED AT	KINDER	226.	9.17	166.	60.	32.	0.46		
+ HYDROGRAPH AT	SUB5	14.	9.33	11.	4.	2.	0.04		
+ 2 COMBINED AT	JEROME	239.	9.17	177.	64.	34.	0.50		
+ HYDROGRAPH AT	SUB6	50.	9.00	34.	11.	6.	0.09		
+ 2 COMBINED AT	EDGAR	289.	9.17	211.	75.	40.	0.59		
+ HYDROGRAPH AT	SUB7	49.	10.17	42.	19.	10.	0.12		
+ 2 COMBINED AT	RTE157	332.	9.17	250.	95.	51.	0.71		
+ HYDROGRAPH AT	SUB8	12.	8.67	8.	2.	1.	0.02		
+ 2 COMBINED AT	RTE 3	343.	9.17	257.	97.	52.	0.73		
+ HYDROGRAPH AT	SUB9	23.	8.67	15.	5.	2.	0.03		
+ 2 COMBINED AT	TERMRR	363.	9.17	271.	102.	55.	0.76		
+ HYDROGRAPH AT	BORROW	115.	9.00	82.	31.	17.	0.13		
+ HYDROGRAPH AT	SUB10	104.	9.33	76.	25.	13.	0.17		
+ 2 COMBINED AT	SUBL+B	217.	9.17	156.	56.	30.	0.30		
+ 2 COMBINED AT	LEVIN	581.	9.17	426.	158.	85.	1.06		

*** NORMAL END OF HEC-1 ***

Appendix B

))

Appendix B
CROSS SECTIONAL 1D TABLES FEQUTL INPUTS

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

; For all the cross sections used in the Dead Creek FEQ model

; -----
; CALCULATIONS FOR STRUCTURE #6A AT PARK COLLEGE CULVERT

FEQX
 TABLE#= 0190 NEWBETAM SAVE22 OUT22
 STATION=1.711
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS1 OF PARKS COLLEGE CULVERT
 OFFSET ELEVATION SUB
 -69 408.00 1 EXTENDED PT
 -19 405.50 2 NAIL 6A

-6	399.41	3	TOE DITCH L
0	398.59	3	FL DITCH
8.2	399.68	3	TOE DITCH R
10.3	402.51	4	NAIL 6A
70	406.00	4	EXTENDED PT
100	406.50	5	
300	407.50	-1	EXTENDED PT

FEQX

TABLE#= 0192 NEWBETAM SAVE22 OUT22
 STATION=1.708
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS2 OF PARKS COLLEGE CULVERT
 OFFSET ELEVATION SUB
 -4.8 404.76 2 NAIL 6B
 0 399.64 2 TOE DITCH L
 4.9 401.30 2 TOP EXPOSED PIPE
 12.2 400.01 2 TOE DITCH R
 12.2 402.29 -1 NAIL 6B

FEQX

TABLE#= 0193 NEWBETAM SAVE22 OUT22
 STATION=1.666
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; PARKS COLLEGE CULVERT - TOP OF RD PROFILE
 OFFSET ELEVATION SUB
 ; CROSS SECTION ABOVE THE PARK COLLEGE CULVERT. USE A CONSTANT
 ; MANNING'S COEFFICIENT OF 0.045
 -692.64 410.53 1 3238
 -654.16 408.54 1 3014
 -618.95 405.26 1 3239
 -602.36 404.84 1 3240
 -591.97 403.65 1 3242
 -531.71 404.81 1 3243
 -531.71 405.06 1 3244
 -478.02 404.85 1 3245
 -424.22 404.33 1 3246
 -368.2 404.90 1 3247
 -311.58 405.17 1 3248
 -254.42 405.42 1 3249
 -195.99 405.21 1 3250
 -125.32 405.22 1 3251
 -65.01 403.90 1 3252
 0 403.75 1 3253
 61.97 404.56 1 3254
 120.97 405.25 1 3255
 153.78 405.04 1 3257
 219.84 405.42 1 3258
 249.97 405.42 1 3259
 278.61 403.35 1 3260
 301.32 405.85 1 3261
 383.08 405.75 1 3262
 400.00 410.00 -1 Last point extended yxl

FEQX

TABLE#= 0194 NEWBETAM SAVE22 OUT22
 STATION=1.578
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095

; XS3 OF PARKS COLLEGE CULVERT
 OFFSET ELEVATION SUP
 -4.7 404.15 2 NAIL 6C
 0 399.44 2 TOE DITCH L
 3.2 400.76 2 TOP EXPOSED PIPE
 8 399.61 2 TOE DITCH R
 16.2 403.21 -1 NAIL 6C

FEQX
 TABLE#= 0196 NEWBETAM SAVE22 OUT22
 STATION=1.575

NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050

; XS4 OF PARKS COLLEGE CULVERT

OFFSET ELEVATION SUB
 -150.0 410.00 1 EXTENDED, YXL
 -39.2 408.00 2 EXTENDED PT
 -12.2 403.75 2 NAIL 6D
 -4.9 399.98 3 TOE DITCH L
 0 398.31 3 TOE EXPOSED PIPE
 4.8 399.91 4 TOE DITCH R
 8.7 402.96 4 NAIL 6D
 130 406.00 5 EXTENDED PT
 361 407.50 5 EXTENDED PT
 400 410.00 -1 EXTENDED, YXL

; -----
; CALCULATIONS FOR STRUCTURE #2 AT JUDITH ST.

FEQX
 TABLE#= 0100 NEWBETAM SAVE22 OUT22
 STATION=2.701
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050

; XS1 OF JUDITH ST, STRUCTURE #2, XS-2A

OFFSET ELEVATION SUB
 -60.0 410.00 1 EXTENDED YXL
 -52.5 407.41 2 T BANK
 -36.5 401.05 2 EDGE WATER
 -26.0 399.75 3 WATER
 0.0 399.10 3 INV
 19.0 399.90 4 WATER
 34.9 400.75 4 EDGE WATER
 39.5 403.85 4
 49.0 406.75 4 T BANK
 85.0 407.50 5 T BANK
 100.0 410.00 -1 EXTENDED YXL

FEQX
 TABLE#= 0102 NEWBETAM SAVE22 NOOUT
 STATION=2.694
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
; XS2 OF JUDITH ST, STRUCTURE #2, XS-2B
 OFFSET ELEVATION SUB
 -1.1 404.93 2 T BANK
 0.0 401.85 2 INV
 3.7 402.05 2 WATER
 5.0 404.73 -1 T BANK

FEQX

TABLE#= 0103 NEWBETAM SAVE22 OUT22
 STATION=2.690
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.025 0.095
 ; JUDITH ST - TOP OF RD PROFILE
 OFFSET ELEVATION SUB
 -1050 410.00 2 EXTENDED YXL
 -925 408.00 2 INTERP PT
 -100 407.90 2 INTERP PT
 0 407.50 2 INTERP PT
 175 407.00 2 EXTENDED YXL
 200 406.50 2
 500 406.50 2
 750 407.00 2
 1000 408.00 2
 1100 410.00 -1 EXTENDED TO 2' TOPO, YXL

FEQX
 TABLE#= 0104 NEWBETAM SAVE22 NOOUT
 STATION=2.681
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS3 OF JUDITH ST, STRUCTURE #2, XS-2C
 OFFSET ELEVATION SUB
 -13.2 402.75 2 T BANK
 -7.0 400.40 2 WATER
 0.0 401.45 2 INV
 1.0 400.40 2 WATER
 5.0 401.45 2
 7.0 402.75 -1 T BANK

FEQX
 TABLE#= 0106 NEWBETAM SAVE22 OUT22
 STATION=2.677
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS4 OF JUDITH ST, STRUCTURE #2, XS-2D
 OFFSET ELEVATION SUB
 -70.0 410.00 1 EXTENDED YXL
 -38.7 408.17 2 T BANK
 -29.0 402.20 2
 -23.0 400.35 2
 -14.0 399.85 3 WATER
 0.0 398.95 3 INV
 12.0 399.35 4 WATER
 24.5 400.35 4 WATER
 32.5 401.45 4
 45.0 405.70 4 T BANK
 53.0 408.00 5 EXTENDED PT
 80.0 410.00 -1 EXTENDED YXL

; -----
; CALCULATIONS FOR STRUCTURE #3 AT CAHOKIA ST.

FEQX
 TABLE#= 0108 NEWBETAM SAVE22 OUT22
 STATION=2.400
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS1 OF CAHOKIA ST, STRUCTURE #3, XS-3A

OFFSET	ELEVATION	SUB
-200.0	409.00	1
-96.0	407.30	1 EXTENDED PT
-41.4	405.33	2 T BANK
-39.0	400.25	2
-25.0	400.24	2 EDGE WATER
-11.0	399.01	3 WATER
0.0	398.51	3 INV
11.0	398.78	4 WATER
23.0	400.34	4
34.0	403.17	5
46.0	407.33	5 T BANK
200.0	409.00	-1

FEQX

TABLE#= 0110 NEWBETAM SAVE22 NOOUT
 STATION=2.391
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS2 OF CAHOKIA ST, STRUCTURE #3, XS-3B
 OFFSET ELEVATION SUB

-11.8	403.81	2 T BANK
-7.4	401.17	2
-2.3	400.14	2
0.0	399.23	2 INV
1.9	399.82	2
6.2	402.64	2
9.2	404.15	-1 T BANK

FEQX

TABLE#= 0111 NEWBETAM SAVE22 OUT22
 STATION=2.387
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.025 0.095
 ; - TOP OF RD PROFILE
 OFFSET ELEVATION SUB

-1225.0	410.00	2 EXTENDED TO 2' TOPO, YXL
-1150.0	404.20	2 EXTENDED TO 2' TOPO, YXL
-600.0	404.10	2 EXTENDED TO 2' TOPO, YXL
-525.0	404.00	2 EXTENDED TO 2' TOPO, YXL
-425.0	404.00	2 EXTENDED TO 2' TOPO, YXL
-400.0	404.10	2 EXTENDED TO 2' TOPO, YXL
; -1150.0	406.20	2 EXTENDED TO 2' TOPO, YXL
; -600.0	406.10	2 EXTENDED TO 2' TOPO, YXL
; -525.0	406.00	2 EXTENDED TO 2' TOPO, YXL
; -425.0	406.00	2 EXTENDED TO 2' TOPO, YXL
; -400.0	406.10	2 EXTENDED TO 2' TOPO, YXL
-250.0	406.20	2 EXTENDED TO 2' TOPO, YXL
-100.0	409.00	2 EXTENDED YXL
; -91.0	407.90	2 INTERP PT
; 0.0	408.10	2 INTERP PT
; 86.0	407.90	2 INTERP PT
; FROM -91.0 TO 86.0 TO BE SIMULATED TO CULVERT, OTHERWISE		
; IT IS TO BE SIMULATED BY CHANRAT		
-91.0	417.90	2 INTERP PT
0.0	418.10	2 INTERP PT
86.0	417.90	2 INTERP PT
120.0	409.00	2 YXL EXTENDED
200.0	406.00	2 EXTENDED TO 2' TOPO, YXL
550.0	406.00	2 EXTENDED TO 2' TOPO, YXL
725.0	404.50	2 EXTENDED TO 2' TOPO, YXL
; 725.0	406.50	2 EXTENDED TO 2' TOPO, YXL

875.0	406.00	2	EXTENDED TO 2' TOPO, YXL
900.0	408.00	2	EXTENDED TO 2' TOPO, YXL
975.0	410.00	-2	EXTENDED TO 2' TOPO, YXL

FEQX

TABLE#= 0112 NEWBETAM SAVE22 NOOUT
 STATION=2.383
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS3 OF CAHOKIA ST, STRUCTURE #3, XS-3C
 OFFSET ELEVATION SUB

-32.4	404.36	2	T BANK
-32.0	402.77	2	
-15.0	401.47	2	
-6.3	400.31	2	WATER
0.0	399.03	2	INV
4.0	400.12	2	WATER
9.0	404.07	-1	T BANK

FEQX

TABLE#= 0114 NEWBETAM SAVE22 OUT22
 STATION=2.378
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS4 OF CAHOKIA ST, STRUCTURE #3, XS-3D
 OFFSET ELEVATION SUB

-251.0	408.00	1	EXTENDED PT
-40.8	405.61	2	T BANK
-24.0	400.37	2	EDGE WATER
-11.0	399.29	3	WATER
0.0	398.65	3	INV
11.0	399.42	4	WATER
23.0	400.34	4	WATER
31.0	401.69	4	EDGE WATER
48.0	406.88	5	T BANK
128.0	408.00	-1	EXTENDED PT

; -----
; CALCULATIONS FOR STRUCTURE #4 AT KINDER LANE

FEQX

TABLE#= 0116 NEWBETAM SAVE22 OUT22
 STATION=2.330
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS1 OF KINDER ST, STRUCTURE #4, XS-4A
 OFFSET ELEVATION SUB

-191.7	407.50	1	EXTENDED PT
-41.7	406.55	1	T BANK
-24.0	400.31	2	WATER
-12.0	398.81	3	WATER
0.0	397.96	3	INV
16.0	399.01	4	WATER
26.0	400.21	4	EDGE WATER
32.0	401.91	5	
45.0	406.34	5	T BANK
103.0	408.00	-1	EXTENDED PT

FEQX

TABLE#= 0118 NEWBETAM SAVE22 NOOUT
 STATION=2.324

NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS2 OF KINDER ST, STRUCTURE #4, XS-4B
 OFFSET ELEVATION SUB
 -41.6 406.04 1 T BANK
 -31.4 401.41 1
 -21.4 400.21 1 EDGE WATER
 -14.4 399.41 1
 -4.3 398.46 2 WATER
 0.0 398.81 2 WATER
 2.6 400.31 2 WATER
 5.0 402.85 3
 4.6 401.51 3
 7.6 403.11 -1 T BANK

FEQX
 TABLE#= 0120 NEWBETAM SAVE22 NOOUT
 STATION=2.312
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS3 OF KINDER LN, STRUCTURE #4, XS-4C
 OFFSET ELEVATION SUB
 -15.9 405.09 1 T BANK
 -6.0 400.16 1 EDGE WATER
 -4.6 399.71 2 WATER
 0.0 398.96 2 INV
 7.7 400.21 2 WATER
 12.7 401.01 3
 21.7 401.61 3
 31.7 404.97 -1 T BANK

FEQX
 TABLE#= 0122 NEWBETAM SAVE22 OUT22 EXTEND
 STATION=2.306
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS4 OF KINDER ST, STRUCTURE #4, XS-4D
 OFFSET ELEVATION SUB
 -71.4 408.00 1 EXTENDED PT
 -37.9 404.18 1 T BANK
 -24.0 400.11 2
 -11.0 398.71 3 WATER
 0.0 398.11 3 INV
 10.0 398.91 4 WATER
 23.0 400.21 4 EDGE WATER
 41.0 405.15 5 T BANK
 91.0 406.50 -1 EXTENDED PT

FEQX
 TABLE#= 0119 NEWBETAM SAVE22 OUT22
 STATION=2.318
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.025 0.095
 ; KINDER LANE, TOP OF RD PROFILE, STRUCTURE #4
 ; THE SECTION AWAY FROM THE BRIDGE IS TO BE SIMULATED
 ; BY USING THE CHANRAT ROUTINE INSTEAD OF OVERFLOW IN THE
 ; CULVERT ROUTINE. EASIERLY TO CONVERGE.
 OFFSET ELEVATION SUB
 -1150.0 410.00 2 EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
 -1000.0 404.00 2 EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
 -675.0 404.00 2 EXTENDED ACCORDING TO 2' TOPO MAPS, YXL

-525.0	404.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-450.0	404.10	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-350.0	404.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-275.0	406.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-213.0	407.00	2	
; -213.0	415.00	2	CENTRAL PORTION NO FLOW
0.0	407.50	2	CENTRAL PORTION NO FLOW
; 188.0	415.00	2	CENTRAL PORTION NO FLOW
188.0	407.00	2	
200.0	408.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
275.0	409.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
350.0	408.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
550.0	406.50	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
800.0	408.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
950.0	408.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
1000.0	410.00	-1	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL

; -----
; CALCULATIONS FOR STRUCTURE #5 AT JEROME LANE

FEQX

TABLE#= 124 NEWBETAM SAVE22 OUT22

STATION=2.222

NAVM=00000 SCALE=	1.0	SHIFT=	0.0
NSUB 5 0.045	0.095	0.060	0.095 0.050

; XS1 OF JEROME LN, STRUCTURE #5, XS-5A

OFFSET ELEVATION SUB

-58.0	407.37	1	T BANK
-39.0	400.25	2	EDGE WATER
-29.0	399.65	2	WATER
-13.5	399.45	3	WATER
0.0	399.20	3	INV
16.0	400.25	4	WATER
22.0	402.35	4	
34.0	408.21	5	T BANK
78.1	407.68	5	EXTENDED PT
100.0	408.05	-1	

FEQX

TABLE#= 126 NEWBETAM SAVE22 NOOUT

STATION=2.216

NAVM=00000 SCALE=	1.0	SHIFT=	0.0
NSUB 3 0.095	0.065	0.095	

; XS2 OF JEROME LN, STRUCTURE #5, XS-5B

OFFSET ELEVATION SUB

-19.1	406.09	1	T BANK
-14.0	405.65	1	
-2.0	400.15	2	WATER
0.0	399.15	2	WATER
2.5	400.10	2	WATER
5.0	402.85	3	
11.0	404.75	3	
31.0	409.53	-1	T BANK

FEQX

TABLE#= 127 NEWBETAM SAVE22 OUT22

STATION=2.208

NAVM=00000 SCALE=	1.0	SHIFT=	0.0
NSUB 3 0.095	0.025	0.095	

; JEROME LN - TOP OF RD PROFILE, STRUCTURE #5

OFFSET ELEVATION SUB

-775.0	412.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-737.5	410.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-700.0	408.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-600.0	406.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-510.0	405.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-300.	406.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-175.0	408.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
-120.0	407.00	2	INTERP PT
-117.7	406.19	2	INTERP PT
-37.5	410.00	2	
0.0	407.59	2	INTERP PT
37.5	410.00	2	
102.6	407.62	2	INTERP PT
375.0	410.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
540.0	408.30	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
1012.5	410.00	2	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL
1050.0	412.00	-1	EXTENDED ACCORDING TO 2' TOPO MAPS, YXL

FEQX

TABLE#= 128 NEWBETAM SAVE22 NOOUT
 STATION=2.200
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095

; XS3 OF JEROME LN, STRUCTURE #5, XS-5C
 OFFSET ELEVATION SUB

-23.6	407.64	1	T BANK
-16.0	400.65	2	WATER
0.0	399.90	2	INV
6.0	402.05	2	WATER
19.0	400.75	3	
44.0	401.55	3	
53.0	406.29	-1	T BANK

FEQX

TABLE#= 130 NEWBETAM SAVE22 OUT22
 STATION=2.195
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS4 OF JEROME LN, STRUCTURE #5, XS-5D

OFFSET ELEVATION SUB

-100.0	410.00	1	EXTENDED, YXL
-81.4	408.50	1	EXTENDED PT
-71.4	408.00	1	EXTENDED PT
-47.8	406.65	2	T BANK
-17.0	401.25	2	
-15.0	400.65	3	
0.0	400.15	3	INV
11.0	400.25	4	WATER
15.0	402.75	4	WATER
21.0	405.17	4	T BANK
91.0	406.50	5	EXTENDED PT
381.0	407.50	5	EXTENDED PT
400.0	408.50	5	EXTENDED YXL
500.0	410.00	-1	EXTENDED, YXL

; -----
; CALCULATIONS FOR STRUCTURE #6 AT EDGAR STREET

FEQX

TABLE#= 0132 NEWBETAM SAVE22 OUT22
 STATION=2.023
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS1 OF EDGAR ST. CULVERT, STRUCTURE #6, XS-6A
 OFFSET ELEVATION SUB
 -91.50 408.50 1 EXTENDED PT
 -41.45 403.22 1 T BANK
 -33.00 400.12 2 WATER
 -17.00 399.06 3 WATER
 0.00 398.20 3 INV
 11.00 398.76 4 WATER
 21.80 400.32 4 WATER
 32.00 404.07 4 T BANK
 90.00 406.00 5 EXTENDED PT
 374.00 407.50 -1 EXTENDED PT

FEQX

TABLE#= 0134 NEWBETAM SAVE22 NOOUT
 STATION=2.017
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 1 0.075
 ; XS2 OF EDGAR ST. CULVERT, STRUCTURE #6, XS-6B
 OFFSET ELEVATION SUB
 -15.05 403.35 1 T BANK
 -3.10 400.10 1 WATER
 0.00 398.76 1 INV
 18.5 399.43 1 WATER
 29.1 400.18 1 WATER
 38.0 400.58 1
 49.5 403.71 -1 T BANK

FEQX

TABLE#= 0135 NEWBETAM SAVE22 OUT22
 STATION=2.014
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 1 0.025
 ; EDGAR STREET CULVERT - TOP OF RD PROFILE
 OFFSET ELEVATION SUB
 -600.0 412.00 1 EXTENDED BY 2' TOPO, YXL
 -375.0 410.00 1 EXTENDED BY 2' TOPO, YXL
 -350.0 406.00 1 EXTENDED BY 2' TOPO, YXL
 -300.0 404.00 1 EXTENDED BY 2' TOPO, YXL
 -200.0 403.90 1 INTERP PT
 -162.5 404.00 1
 0.0 404.20 1 INTERP PT
 260.0 405.40 1 INTERP PT
 275.0 405.40 1 EXTENDED BY 2' TOPO, YXL
 850.0 406.00 1 EXTENDED BY 2' TOPO, YXL
 1200.0 410.00 -1 EXTENDED BY 2' TOPO, YXL

FEQX

TABLE#= 0136 NEWBETAM SAVE22 NOOUT
 STATION=2.010
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 1 0.075
 ; XS3 OF EDGAR STREET CULVERT, STRUCTURE #6, XS-6C
 OFFSET ELEVATION SUB
 -38.1 402.89 1 T BANK
 -30.6 400.89 1
 -19.6 400.68 1

-12.5	400.18	1	WATER
-3.1	399.76	1	WATER
0	398.52	1	INV
2.7	400.02	1	WATER
8.3	402.42	-1	T BANK

FEQX

TABLE#= 0138 NEWBETAM SAVE22 OUT22

STATION=2.000

NAVM=00000	SCALE=	1.0	SHIFT=	0.0		
NSUB	5	0.045	0.095	C.060	0.095	0.050

; XS4 OF EDGAR STREET CULVERT, STRUCTURE #6, XS-6D

OFFSET ELEVATION SUB

-81.4	408.50	1	EXTENDED PT
-71.4	408.00	1	EXTENDED PT
-45.4	403.06	2	T BANK
-35.6	400.25	2	WATER
-19.0	398.62	3	WATER
0	397.89	3	INV
12.0	398.42	4	WATER
23.6	400.22	4	WATER
31.0	403.54	4	T BANK
91.0	406.50	5	EXTENDED PT
381.0	407.50	-1	EXTENDED PT

; -----
; CALCULATIONS FOR STRUCTURE #7 AT Route 157

FEQX

TABLE#= 0140 NEWBETAM SAVE22 OUT22

STATION=1.472

NAVM=00000	SCALE=	1.0	SHIFT=	0.0		
NSUB	5	0.045	0.095	0.060	0.095	0.050

; XS1 OF RTE 157, STRUCTURE #7, XS-7A

OFFSET ELEVATION SUB

-242.0	408.00	1	EXTENDED PT
-82.0	406.00	2	EXTENDED PT
-12.0	400.47	2	T BANK
-8.0	398.76	3	WATER
0.0	398.76	3	INV
7.0	398.86	3	WATER
9.0	399.76	4	
15.0	400.93	4	T BANK
65.0	406.00	5	EXTENDED PT
135.0	408.00	-1	EXTENDED PT

FEQX

TABLE#= 0142 NEWBETAM SAVE22 NOOUT

STATION=1.469

NAVM=00000	SCALE=	1.0	SHIFT=	0.0
NSUB	3	0.095	0.065	0.095

; XS2 OF RTE 157, STRUCTURE #7, XS-7B

OFFSET ELEVATION SUB

-6.8	403.90	2	T HEADWALL
-6.8	398.26	2	WATER
0.0	398.46	1	WATER
0.0	403.92	-2	T HEADWALL

FEQX

TABLE#= 0143 NEWBETAM SAVE22 OUT22

STATION=1.453

NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.025 0.095
 ; RTE 157 - TOP OF RD PROFILE, STRUCTURE #7
 OFFSET ELEVATION SUB
 -425.0 410.00 2 EXTENDED TO 2' TOPO, YXL
 -260.0 408.30 2 INTERP PT
 -212.5 408.10 2 EXTENDED TO 2' TOPO, YXL
 -50.0 408.00 2 INTERP PT
 0.0 407.80 2 INTERP PT
 244.0 408.00 2 INTERP PT
 250.0 408.00 2 EXTENDED TO 2' TOPO, YXL
 325.0 410.00 -1 EXTENDED TO 2' TOPO, YXL

FEQX
 TABLE#= 0144 NEWBETAM SAVE22 NOOUT
 STATION=1.437
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS3 OF RTE 157, STRUCTURE #7, XS-7C
 OFFSET ELEVATION SUB
 -6.8 402.96 2 T HEADWALL
 -6.8 398.21 2 WATER
 0.0 398.36 2 WATER
 0.0 402.98 -1 T HEADWALL

FEQX
 TABLE#= 0146 NEWBETAM SAVE22 OUT22
 STATION=1.433
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS4 OF RTE 157, STRUCTURE #7, XS-7D
 OFFSET ELEVATION SUB
 -116.5 409.00 1 EXTENDED PT
 -46.5 406.00 2 EXTENDED PT
 -17.5 400.98 2 T BANK
 -7.0 398.76 3 WATER
 0.0 398.46 3 INV
 8.0 399.11 4 WATER
 14.0 401.04 4 T BANK
 47.0 406.00 5 EXTENDED PT
 267.0 408.00 -1 EXTENDED PT
 ; -----
 ; CALCULATIONS FOR STRUCTURE #8 AT ROUTE 3.

FEQX
 TABLE#= 0148 NEWBETAM SAVE22 OUT22
 STATION=1.375
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS1 OF RTE 3, STRUCTURE #8, XS-8A
 OFFSET ELEVATION SUB
 -118 408.00 1 EXTENDED PT
 -14.9 401.33 2 T BANK
 -6 399.64 3 WATER
 0 398.14 3 INV
 5 398.94 4 WATER
 10 400.84 4
 24 404.29 5 T BANK
 78.1 407.68 -1 EXTENDED PT

FEQX
 TABLE#= 0150 NEWBETAM SAVE22 NOOUT
 STATION=1.371
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS2 OF RTE 3, STRUCTURE #8, XS-8B
 OFFSET ELEVATION SUB
 -7 402.71 1 T HEADWALL
 -7 398.19 2 WATER
 0 397.99 3 WATER
 0 402.56 -1 T HEADWALL

FEQX
 TABLE#= 0151 NEWBETAM SAVE22 OUT22 EXTEND
 STATION=1.356
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 1 0.025
 ; RTE 3 - TOP OF RD PROFILE
 OFFSET ELEVATION SUB
 -600.0 409.0 1 EXTENDED TO 2' TOPO, YXL
 -200.0 407.50 1
 -117.7 407.00 1 INTERP PT
 0 407.59 1 INTERP PT
 102.6 407.62 1 INTERP PT
 400.0 410.00 -1 EXTENDED TO 2' TOPO, YXL

FEQX
 TABLE#= 0152 NEWBETAM SAVE22 NOOUT
 STATION=1.340
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS3 OF RTE 3, STRUCTURE #8, XS-8C
 OFFSET ELEVATION SUB
 -7 402.07 1 T HEADWALL
 -7 397.94 2 WATER
 0 397.79 3 WATER
 0 401.99 -1 T HEADWALL

FEQX
 TABLE#= 0154 NEWBETAM SAVE22 OUT22
 STATION=1.336
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS1 OF OLD RTE 3, STRUCTURE #8, XS-8D
 OFFSET ELEVATION SUB
 -103.2 407.62 1 EXTENDED PT
 -49.8 407.08 2 T BANK
 -19 399.84 2
 -7 398.69 3 WATER
 0 398.04 3 INV
 6 398.69 3 WATER
 16 399.84 4 TOE
 23 402.39 4
 36 405.14 4 T BANK
 77.1 405.76 5 EXTENDED PT
 158 408.00 -1 EXTENDED PT

; -----
; CROSS SECTIONS AND CULVERT INPUT FOR STRUCTURE #9
; AT OLD ROUTE 3

FEQX

TABLE#= 0156 NEWBETAM SAVE22 OUT22
 STATION=1.336
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.045 0.095 0.050
 ; XS2 OF OLD RTE 3, STRUCTURE #9, XS-9A
 OFFSET ELEVATION SUB
 -30.0 407.00 2 Extended in order to converge
 -16.5 404.19 2 T BANK
 -6 398.89 3 WATER
 0 397.99 3 INV
 6 398.99 4 WATER
 21 403.15 4 T BANK
 30 407.00 -1 Extended in order to converge

FEQX
 TABLE#= 0158 NEWBETAM SAVE22 NOOUT
 STATION=1.332
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.045 0.095
 ; XS3 OF OLD RTE 3, STRUCTURE #9, XS-9B
 OFFSET ELEVATION SUB
 -16 407.10 1 T BANK
 -4 398.69 2 WATER
 0 398.24 2 WATER
 3 389.79 3 WATER
 13 406.96 -1 T BANK

FEQX
 TABLE#= 0159 NEWBETAM SAVE22 OUT22
 STATION=1.326
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.025 0.095
 ; OLD RTE 3 - TOP OF RD PROFILE, STRUCTURE #9
 OFFSET ELEVATION SUB
 -600 409.00 2 EXTENDED TO 2' TOPO, YXL
 -138 408.20 2 INTERP PT
 -138 407.80 2 INTERP PT
 -22 408.00 2 INTERP PT
 0 408.10 2 INTERP PT
 62 407.80 2 INTERP PT
 69 406.00 2 MEAS PT
 150 405.00 2 MEAS PT
 250 408.00 2 Extended yxl
 400 410.00 -1 EXTENDED TO 2' TOPO, YXL

FEQX
 TABLE#= 0160 NEWBETAM SAVE22 NOOUT
 STATION=1.320
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.045 0.095
 XS3 OF OLD RTE3, Structure #9, XS-9C
 -13.00 407.10 1 T BANK
 -4.00 398.69 2 WATER
 0.00 398.24 2 WATER
 3.00 389.79 3 WATER
 13.00 406.96 -1 T BANK

FEQX
 TABLE#= 0162 NEWBETAM SAVE22 OUT22
 STATION=1.318
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.045 0.095 0.050

; XS4 OF OLD RTE 3, STRUCTURE #9, XS-9D
 OFFSET ELEVATION SUB

-68.0	408.60	1	EXTENDED PT
-28.5	408.00	2	EXTENDED PT
-18.5	406.30	2	T BANK
-4	398.99	3	WATER
0	398.29	3	INV
4	398.79	3	WATER
9	405.29	4	
21	406.00	4	T BANK
121	408.20	-1	EXTENDED PT

; -----
 ; CROSS SECTIONS AND CULVERT INPUT FOR STRUCTURE #10
 ; AT CARGILL ELEVATOR RD

FEQX
 TABLE#= 0164 NEWBETAM SAVE22 OUT22

STATION=1.213

NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.045 0.095 0.050

; CARGILL ELEVATOR RD, STRUCTURE #10, XS-10A, upstream

OFFSET ELEVATION SUB

-169.8	410	1	EXTENDED PT
-41.8	406.50	2	EXTENDED PT
-19.8	403.02	2	T BANK
-13.0	403.12	2	T BANK
-7.0	398.56	3	WATER
0.0	397.61	3	INV
6.3	398.68	3	WATER
16.4	403.51	4	T BANK
125.4	406.00	5	EXTENDED PT
183.4	410	-1	EXTENDED PT

FEQX
 TABLE#= 0166 NEWBETAM SAVE22 NOOUT

STATION=1.209

NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.045 0.095

; XS2 OF CARGILL ELEVATOR RD, STRUCTURE #10, XS-10B

OFFSET ELEVATION SUB

-19.0	405.74	1	T BANK
-12.0	401.92	1	
-2.3	398.78	2	WATER
0.0	397.50	2	INV
3.8	398.96	2	WATER
7.0	400.70	3	
12.0	402.85	3	
17.0	406.02	-1	T BANK

FEQX
 TABLE#= 0167 NEWBETAM SAVE22 OUT22

STATION=1.205

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 1 0.025

; CARGILL ELEVATOR RD - TOP OF RD PROFILE, STRUCTURE #10

OFFSET ELEVATION SUB

-225	412.00	1	EXTENDED TO 2' TOPO, YXL
-161	410.00	1	INTERP PT
-119	408.00	1	INTERP PT
-48	407.36	1	INTERP PT
0	407.30	1	INTERP PT

77	408.00	1	INTERP PT
150	414.76	1	MEAS PT
175	416.00	-1	EXTENDED TO 2' TOPO, YXL

FEQX

TABLE#= 0168 NEWBETAM SAVE22 NOOUT

STATION=1.200

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 3 0.095 0.045 0.095

; XS3 OF CARGILL ELEVATOR RD, STRUCTURE 10, XS-10C

OFFSET ELEVATION SUB

-16.4	405.36	1	T BANK
-9.9	400.84	1	
-2.2	397.52	2	WATER
0.0	396.65	2	INV
2.2	397.43	2	WATER
10.1	402.04	3	
16.1	404.70	-1	T BANK

FEQX

TABLE#= 0170 NEWBETAM SAVE22 OUT22

STATION=1.194

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 5 0.045 0.095 0.045 0.095 0.050

; CARGILL ELEVATOR RD, STRUCTURE #10, XS-10D, downstream

OFFSET ELEVATION SUB

-140.2	410.00	1	EXTENDED PT
-50.2	407.00	2	EXTENDED PT
-20.2	403.38	2	T BANK
-8.0	399.36	2	
-5.3	397.42	3	WATER
0.0	396.48	3	INV
7.0	397.50	4	WATER
17.5	403.38	4	T BANK
129.5	406.50	5	EXTENDED PT
146.5	410.00	-1	EXTENDED PT

; CROSS SECTIONS AND CULVERT INPUT FOR STRUCTURE #11
; AT TERMINAL RR RD

FEQX

TABLE#= 0172 NEWBETAM SAVE22 OUT22

STATION=1.191

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 5 0.045 0.095 0.045 0.095 0.050

; TERMINAL RR RD, STRUCTURE #11, XS-11A, UPSTREAM CROSS SECTION

OFFSET ELEVATION SUB

-123.8	410	1	EXTENDED PT
-59.8	408.00	2	EXTENDED PT
-19.8	403.02	2	T BANK
-13.4	402.20	2	T BANK
-5.2	397.16	3	WATER
0	396.44	3	INV
4.2	397.34	4	WATER
14.6	403.02	4	T BANK
36.6	408.00	5	EXTENDED PT
58.6	410	-1	EXTENDED PT

FEQX

TABLE#= 0174 NEWBETAM SAVE22 NOOUT

STATION=1.180

NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.045 0.095
 ; XS2 OF TERMINAL RR RD, STRUCTURE #11, XS-11B
 OFFSET ELEVATION SUB
 -36.3 407.40 1 T BANK
 -10.9 399.50 1
 -4.8 397.12 2 WATER
 0 395.40 2 INV
 4.8 397.18 2 WATER
 10.6 401.72 3
 21.2 402.78 3
 29.2 405.34 -1 T BANK

FEQX
 TABLE#= 0175 NEWBETAM SAVE22 OUT22
 STATION=1.170
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 1 0.025
 ; TERMINAL RR RD - TOP OF RD PROFILE, STRUCTURE #11
 OFFSET ELEVATION SUB
 -100.0 415.00 1 Extended yxl
 -54.0 414.67 1 INTERP PT
 -36.6 414.82 1 MEAS PT
 0.0 414.72 1 MID MEAS PT
 35.0 414.87 1 MEAS PT
 105.0 415.00 -1 INTERP PT

FEQX
 TABLE#= 0176 NEWBETAM SAVE22 NOOUT
 STATION=1.160
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.045 0.095
 ; XS3 OF TERMINAL RR RD, STRUCTURE #11, XS-11C
 OFFSET ELEVATION SUB
 -19.0 403.26 1 T BANK
 -9.5 400.06 1
 -4.7 397.29 2
 0.0 396.02 2 INV
 4.0 397.40 2 WATER
 7.8 400.14 3
 16.0 401.19 3
 19.5 403.54 3
 23.5 404.58 -1 T BANK

FEQX
 TABLE#= 0178 NEWBETAM SAVE22 OUT22 EXTEND
 STATION=1.150
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.045 0.095 0.050
 ; XS4 OF TERMINAL RR RD, STRUCTURE #11, XS-11D
 OFFSET ELEVATION SUB
 -48.0 410.00 1 EXTENDED PT
 -45.0 408.00 2 EXTENDED PT
 -12.1 401.18 2 T BANK
 -8.2 399.86 3
 -2.8 397.45 3 WATER
 0.0 396.66 3 INV
 2.5 397.38 3 WATER
 9.5 402.00 4 TOE
 16.5 404.08 4 T BANK
 119.5 408.00 -1 EXTENDED PT

; CROSS SECTIONS AND CULVERT INPUT FOR STRUCTURE #12
; AT LEVIN RD

FEQX

TABLE#= 0180 NEWBETAM SAVE22 OUT22

STATION=0.065

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 5 0.045 0.095 0.045 0.095 0.050

; XS1 OF LEVIN RD, STRUCTURE #12, XS-12A

OFFSET ELEVATION SUB

-251.2	410.00	2	EXTENDED PT
-48.2	405.17	2	T BANK
-25.3	398.37	2	
-13.2	395.53	3	WATER
0	391.97	3	INV
9.2	395.57	4	WATER
14.3	398.49	4	
32	403.56	4	T BANK
72	405.50	5	EXTENDED PT
205	410.00	-1	EXTENDED PT

FEQX

TABLE#= 0182 NEWBETAM SAVE22 NOOUT

STATION=0.060

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 3 0.095 0.045 0.095

; XS2 OF LEVIN RD, STRUCTURE #12, XS-12B

OFFSET ELEVATION SUB

-36.3	407.40	2	T BANK
-10.9	399.50	2	
-4.8	397.12	2	WATER
0	395.40	2	INV
4.8	397.18	2	WATER
10.6	401.72	2	
21.2	402.78	2	
29.2	405.34	-1	T BANK

FEQX

TABLE#= 0183 NEWBETAM SAVE22 OUT22

STATION=0.055

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 3 0.095 0.025 0.095

; LEVIN RD - TOP OF RD PROFILE, STRUCTURE #12

OFFSET ELEVATION SUB

-227	410.00	2	INTERP PT
-130.33	407.68	2	MEAS PT
0	407.14	2	MID MEAS PT
85.05	409.56	2	MEAS PT
101	410.00	-1	INTERP PT

FEQX

TABLE#= 0184 NEWBETAM SAVE22 NOOUT

STATION=0.050

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 3 0.095 0.045 0.095

; XS3 OF LEVIN RD, STRUCTURE #12, XS-12C

OFFSET ELEVATION SUB

-32.6	398.07	2	T BANK
-5.1	401.11	2	SW CORNER CULVERT
-5	390.99	2	INV
0	391.19	2	WATER

5	391.43	2	WATER
5.1	401.15	2	NW CORNER CULVERT
33	406.98	-1	T BANK

FEQX

TABLE#= 0186 NEWBETAM SAVE22 OUT22

STATION=0.044

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 5 0.045 0.095 0.045 0.095 0.050

; XS4 OF LEVIN RD, STRUCTURE #12, XS-12D

OFFSET ELEVATION SUB

-53.0	405.27	2	BANK
-29.6	398.07	2	TOE
-7.7	395.31	3	WATER
0	393.62	3	INV
15	392.62	3	WATER
18	395.41	4	TOE
52	406.11	-1	T BANK

; Other cross sections

; -----

FEQX

TABLE#= 0310 NEWBETAM SAVE22 OUT22

STATION=0.194

; 761 FT U/S OF LEVIN RD

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 5 0.045 0.095 0.045 0.095 0.050

OFFSET ELEVATION SUB

-306.80	431.17	1	3125
-269.74	422.71	1	3124
-241.68	413.99	1	3123
-200.73	413.12	1	3122
-160.58	412.23	2	3121
-133.02	405.82	2	3120
-102.82	403.53	2	3119
-68.17	396.85	3	3118
0	392.26	3	Inv 3117
30.19	396.38	4	3116
50.20	404.82	4	3115
77.92	405.41	4	3114
96.62	397.72	4	3113
268.03	397.72	4	3112
284.63	405.23	4	3111
313.50	404.81	4	3110
333.57	398.15	4	3109
456.94	398.36	4	3108
473.16	404.27	4	3107
508.97	404.77	4	3106
568.27	403.92	4	3105
625.58	403.21	5	3104
683.30	402.56	5	3103
737.94	403.28	5	3102
768.33	400.75	5	3101
790.34	414.26	5	3100
809.94	416.25	-1	Top of Levee

FEQX

TABLE#= 0308 NEWBETAM SAVE22 OUT22

STATION=0.467
; UPSTREAM OF LEVIN ROAD IN THE SLOUGH
NAVM=00000 SCALE= 1.0 SHIFT= 0.0
NSUB 5 0.045 0.095 0.045 0.095 0.050
OFFSET ELEVATION SUB
-340.00 406.00 1
-335.85 405.49 1 3146
-279.65 405.58 1 3147
-227.45 405.15 2 3148
-186.55 401.07 2 3149
-170.65 394.07 2 3150
-30.00 392.50 3
0 391.36 3 3134
100.19 396.46 4 3133
123.49 401.98 4 3132
154.80 403.21 4 3131
181.57 412.14 4 3130
231.40 412.71 4 3129
268.07 413.12 5 3128
298.99 423.12 5 3127
321.29 431.27 5 3002
334.62 431.43 -1 3126

FEQX
TABLE#= 0306 NEWBETAM SAVE22 OUT22
STATION=0.716
NAVM=00000 SCALE= 1.0 SHIFT= 0.0
NSUB 5 0.045 0.095 0.045 0.095 0.050
OFFSET ELEVATION SUB
-1402.85 415.57 2 TOB
-1393.95 415.10 2 3301
-1383.56 412.96 2 3302
-1369.08 404.37 2 3303
-1344.88 406.72 2 3304
-1300.09 406.85 2 3305
-1238.93 404.26 2 3306
-1184.20 402.47 2 3307
-1133.58 400.37 2 3308
-1084.59 400.44 2 3309
-1039.68 398.26 2 3310
-994.26 400.84 2 3311
-976.41 396.16 2 3312
-949.86 396.58 2 3314
-892.75 397.00 2 3315
-833.77 397.65 2 3326
-784.38 401.12 2 3325
-743.21 403.24 2 3324
-682.81 403.52 2 3323
-638.96 400.57 2 3322
-585.09 401.09 2 3321
-535.85 403.40 2 3320
-493.81 403.28 2 3319
-459.26 396.71 2 3318
-407.87 395.23 2 3317
-357.94 393.22 2 3316
-317.94 394.95 2 3313
-98.98 392.06 2 3335
-49.63 392.03 3 3336
0 392.02 3 3337
50.22 395.04 4 3338
100.58 396.76 4 3334

116.96	399.27	4	3333
148.10	401.11	4	3332
184.44	411.93	4	3331
216.47	412.48	4	3330
268.51	413.57	4	3329
321.15	431.20	4	3003
335.17	431.24	-1	3327

FEQX

TABLE#= 0307 NEWBETAM SAVE22 OUT22

STATION=0.716

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 5 0.045 0.095 0.045 0.095 0.050

OFFSET ELEVATION SUB

; This is modified from 306 to exclude the side channel storage area
; from the calculation. The side channel storage area will be
; simulated using side-channel weir option

-1402.85	415.57	2	TOB	
-1393.95	415.10	2	3301	
-1383.56	412.96	2	3302	
-1369.08	404.37	2	3303	
-1344.88	406.72	2	3304	
-1300.09	406.85	2	3305	
-1238.93	404.26	2	3306	
-1184.20	402.47	2	3307	
-1133.58	400.37	2	3308	
-1084.59	400.44	2	3309	
-1039.68	398.26	2	3310	
-994.26	400.84	3	3311	
-976.41	396.16	3	3312 Invert of the Dead Creek	
-949.86	396.58	3	3314 Water edge Dead Creek	
-892.75	397.00	4	3315	
-833.77	397.65	4	3326	
-784.38	401.12	4	3325	
-743.21	403.24	4	3324	
-682.81	403.52	4	3323 Top of Dead Creek Bank	
;	-638.96	400.57	1	3322
;	-585.09	401.09	1	3321
;	-535.85	403.40	1	3320
;	-493.81	403.28	1	3319
;	-459.26	396.71	1	3318
;	-407.87	395.23	1	3317
;	-357.94	393.22	1	3316
;	-317.94	394.95	1	3313
;	-98.98	392.06	1	3335
;	-49.63	392.03	1	3336
;	0	392.02	1	3337
;	50.22	395.04	1	3338
;	100.58	396.76	1	3334
;	116.96	399.27	1	3333
;	148.10	401.11	1	3332
180.00	403.52	4	Leveled from Top of Dead Creek Bank	
184.44	411.93	4	3331	
216.47	412.48	5	3330	
268.51	413.57	5	3329	
321.15	431.20	5	3003	
335.17	431.24	-1	3327	

FEQX

TABLE#= 0304 NEWBETAM SAVE22 OUT22

STATION=0.988

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB	5	0.045	0.095	0.045	0.095	0.050
OFFSET ELEVATION SUB						
; -1538.84	414.89	1	3164			
-1515.71	415.10	1	3165			
-1488.07	409.48	1	3166			
-1389.71	408.07	1	3167			
-1369.99	402.75	1	3168			
-1319.06	396.44	2	3169			
-1305.26	397.77	2	3170			
-1293.39	401.47	2	3341			
-1255.34	402.49	2	3351			
-1169.92	403.35	2	3352			
-1104.80	401.85	2	3353			
-1017.13	403.35	2	3354			
-887.29	399.80	2	3355			
-760.64	400.96	2	3356			
-695.53	403.28	2	3357			
-632.13	401.31	2	3358			
-567.60	402.47	2	3359			
-509.40	402.39	2	3360			
-446.53	400.65	2	3361			
-381.04	399.99	2	3362			
-321.20	401.62	2	3363			
-254.31	401.50	2	3364			
-219.51	396.84	2	3365			
-199.72	396.84	3	3366			
0	391.85	3	3367			
406.58	400.29	4	3349			
461.23	411.63	4	3348			
491.36	412.41	4	3347			
540.72	413.35	4	3346			
594.35	431.07	4	3344			
609.05	431.37	-1	3343			

FEQX

TABLE#= 0303 NEWBETAM SAVE22 OUT22

STATION=0.988

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 5 0.045 0.095 0.045 0.095 0.050

OFFSET ELEVATION SUB

; This is modified from 304 to exclude the side channel storage area
; from the calculation. The side channel storage area will be
; simulated using side-channel weir option

; -1538.84	414.89	1	3164
-1515.71	415.10	1	3165
-1488.07	409.48	1	3166
-1389.71	408.07	2	3167
-1369.99	402.75	3	3168
-1319.06	396.44	3	3169 Invert of Dead Creek Main Channel
-1305.26	397.77	4	3170
-1293.39	401.47	4	3341
-1255.34	402.49	4	3351
-1169.92	403.35	4	3352 Top of Dead Creek Bank
; -1104.80	401.85	1	3353
; -1017.13	403.35	1	3354
; -887.29	399.80	1	3355
; -760.64	400.96	1	3356
; -695.53	403.28	1	3357
; -632.13	401.31	1	3358
; -567.60	402.47	1	3359
; -509.40	402.39	1	3360
; -446.53	400.65	1	3361

```

; -381.04    399.99    1    3362
; -321.20    401.62    1    3363
; -254.31    401.50    1    3364
; -219.51    396.84    1    3365
; -199.72    396.84    1    3366
;      0    391.85    1    3367
;   406.58    400.29    1    3349
  450.00    403.35    4    Leveled from the Top of Dead Creek Bank
  461.23    411.63    4    3348
  491.36    412.41    5    3347
  540.72    413.35    5    3346
  594.35    431.07    5    3344
 609.05    431.37   -1    3343

```

FEQX

TABLE#= 0302 NEWBETAM SAVE22 OUT22 EXTEND

STATION=1.666

; ABOVE PARK COLLEGE CULVERT

NAVM=00000	SCALE=	1.0	SHIFT=	0.0
NSUB	5	0.045	0.095	0.060
			0.095	0.050

OFFSET ELEVATION SUB

```

-692.64    410.53    1    3238
-654.16    408.54    1    3014
-618.95    405.26    1    3239
-602.36    404.84    1    3240
-591.97    403.65    1    3242
-531.71    404.81    1    3243
-531.71    405.06    1    3244
-478.02    404.85    1    3245
-424.22    404.33    1    3246
-368.2     404.90    1    3247
-311.58    405.17    1    3248
-254.42    405.42    2    3249
-195.99    405.21    2    3250
-125.32    405.22    2    3251
-65.01     403.90    3    3252
      0     403.75    3    3253
  61.97     404.56    4    3254
 120.97    405.25    4    3255
 153.78    405.04    4    3257
 219.84    405.42    5    3258
 249.97    405.42    5    3259
 278.61    403.35    5    3260
 301.32    405.85    5    3261
 383.08    405.75    5    3262
 340.00    406.00   -1

```

FEQX

TABLE#= 0300 NEWBETAM SAVE22 OUT22 EXTEND

STATION=2.100

; U/S OF EDGAR RD

NAVM=00000	SCALE=	1.0	SHIFT=	0.0
NSUB	5	0.045	0.095	0.060
			0.095	0.050

OFFSET ELEVATION SUB

```

; -1016.19    411.41    1    3472
-1016.19    411.45    1    3472
-991.89    411.42    1    3471
-919.81    410.86    1    3469
-891.78    411.38    1    3468
-782.10    410.84    1    3467
-702.91    410.66    1    3466
-621.74    410.41    1    3465

```

XS_DDCRK.INP

-530.95	409.98	1	3464
-455.94	409.81	1	3463
-380.23	408.92	1	3462
-309.41	408.66	1	3461
-239.24	407.75	2	3460
-147.45	407.33	2	3459
-118.38	407.14	2	3458
-79.19	411.22	2	3457
-45.26	403.62	2	3455
-34.75	400.67	3	3454
0	396.97	3	3453
20.05	400.77	4	3452
44.42	406.69	4	3451
93.27	409.34	4	3450
148.06	409.73	5	3449
171.10	406.70	5	3448
230.39	406.48	5	3447
252.89	405.58	5	3446
273.00	405.59	-1	3444

FINISH

Appendix C

Appendix C

STRUCTURAL 2D FLOW TABLES FEQUTL INPUTS

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WS PROQZ 28
 WS PROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_02.UTL DATE: 05/26/1999

; -----
; CALCULATIONS FOR STRUCTURE #2 AT JUDITH ST.

CHANRAT
TABLE#= 1520

TYPE= 13
LABEL=ESTIMATE OF FLOW OVER THE ROAD AT CAHOKIA ST.
XSTAB#= 103

; FLOODPLAIN SLOPE APPROXIMATELY 0.0008 OR 4.225FT/MILE
BOTSLP=0.0008
LENGTH= 35.0 MIDELEV= 406.50
HEAD SEQUENCE FOR TABLE
NFRAC= 21
POWER= 2.5
0.25
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
6.0
-1.0

MULCON
TABLE#= 501 SAVE22 OLDBETA NOOUT
; CULVERT OPENING US OF STRUCTURE #2, JUDITH ST.
; 0.0' Silt at the bottom of the culvert. 24" CMP
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: CIRC
SPAN: 2.00
RISE: 2.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.00
ROUG: 0.035

MULCON
TABLE#= 502 SAVE22 OLDBETA NOOUT
; CULVERT OPENING DS OF STRUCTURE #2, JUDITH ST.
; 0.0' Silt at the bottom of the culvert. 24" CMP
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: CIRC
SPAN: 2.00
RISE: 2.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.00
ROUG: 0.035

CULVERT
TABLE#= 1020
TYPE= 13
LABEL= 24" CMP CULVERT AT JUDITH ST.
APPROACH SECTION DATA
APPTAB#= 100
APPELV= 399.10

APPLEN= 37.0
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
 ; LOW CHORD U/S = 404.28, D/S = 403.45, LENGTH APPROXIMATELY 70 FT.
 ; THE CORP OF ENGINEERS SURVEY INDICATED A LOW CHORD OF 401.50 FT
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 200 UPSTRM 501 70.0 402.28

DNSTRM 502 0.0 401.45
 -1
 CULCLS=PIPE
 DEPARTURE SECTION DATA
 DEPTAB#= 106
 DEPELV= 398.95
 LOSOPT=MOMENTUM
 DISCHARGE COEFFICIENT DATA
 KRB=0.0
 KWING=0.00
 KPROJ=0.00
 C46=0.00
 TYPE 5 PARAMETERS
 RBVALUE= 0.00
 BVANGLE= 0.00
 WWANGLE= 0.0
 LPOVERD= 0.00
 TYPE5SBF= 0.75
 ROADWAY DESCRIPTION
 PLCWTB=9994
 GLCWTB=9995
 PHCWTB=9996
 GHCWTB=9997
 PSUBTB=9998
 GSUBTB=9999
 ; FLOW OVER THE ROAD TO BE SIMULATED BY CHANRAT ABOVE
 ; THUS CREST ELEVATION IS FABRICATED HIGH.
 OFFSET CREST WIDTH APPROACH SURFACE
 -1050 420.00 35.0 406.00 PAVED
 -925 418.00 35.0 405.00
 -100 417.90 35.0 404.00
 0 417.50 35.0 399.00
 175 417.00 35.0 404.00
 1000 418.00 35.0 405.00
 1100 420.00 35.0 406.00 END
 ; -1050 410.00
 ; -925 408.00
 ; -100 407.90
 ; 0 407.50
 ; 175 407.00
 ; 1000 408.00
 ; 1100 410.00

HEAD SEQUENCE DEFINITION

NFRAC=11
POWER=2.5
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
;6.0
;10.0
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABLES
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_03.UTL DATE: 05/26/1999
 ; -----
 ; CALCULATIONS FOR STRUCTURE #3 AT CAHOKIA ST.

CHANRAT
 TABLE#= 1530

TYPE= 13
 LABEL=ESTIMATE OF FLOW OVER THE ROAD AT CAHOKIA ST.
 XSTAB#= 111
 ; FLOODPLAIN SLOPE APPROXIMATELY 0.0008 OR 4.225FT/MILE
 BOTSLP=0.0008
 LENGTH= 35.0 MIDELEV= 404.00
 HEAD SEQUENCE FOR TABLE
 NFRAC= 21
 POWER= 2.5
 0.25
 0.5
 1.0
 1.5
 2.0
 2.5
 3.0
 3.5
 4.0
 4.5
 5.0
 6.0
 -1.0

MULCON
 TABLE#= 503 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING US OF STRUCTURE #3, CAHOKIA ST.
 ; 0.3' Silt at the bottom of the culvert. 24" CMP
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: CIRC
 SPAN: 2.00
 RISE: 2.00
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 0.30
 ROUG: 0.035

MULCON
 TABLE#= 504 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING DS OF STRUCTURE #3, CAHOKIA ST.
 ; 0.2' Silt at the bottom of the culvert. 24" CMP
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: CIRC
 SPAN: 2.00
 RISE: 2.00
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 0.20
 ROUG: 0.035

CULVERT
 TABLE#= 1030
 TYPE= 13
 LABEL= 24" CMP CULVERT AT CAHOKIA ST.
 APPROACH SECTION DATA
 APPTAB#= 108

APPELV= 398.51
 APPLEN= 47.5
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
 ; LOW CHORD U/S = 401.58, D/S = 401.18, LENGTH APPROXIMATELY 45 FT.
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 200 UPSTRM 503 45.0 399.58

DNSTRM 504 0.0 399.18
 -1

CULCLS=PIPE
 DEPARTURE SECTION DATA
 DEPTAB#= 114
 DEPELV= 398.65
 LOSOPT=MOMENTUM

DISCHARGE COEFFICIENT DATA
 KRB=0.0
 KWING=0.00
 KPROJ=0.00
 C46=0.00

TYPE 5 PARAMETERS

RBVALUE= 0.00
 BVANGLE= 0.00
 WWANGLE= 0.0
 LPOVERD= 0.00
 TYPE5SBF= 0.75
 ROADWAY DESCRIPTION
 PLCWTB=9994
 GLCWTB=9995
 PHCWTB=9996
 GHCWTB=9997
 PSUBTB=9998
 GSUBTB=9999

; Assuming that the section near the creek has weir overflow and the
 ; road section away from the creek be simulated by CHANRAT.

OFFSET	CREST	WIDTH	APPROACH SURFACE
-92.0	410.00	35.0	408.00 PAVED
-91.0	407.90	35.0	403.00
0.0	408.10	35.0	395.00
86.0	407.90	35.0	401.00
87.0	410.00	35.0	408.00 END

HEAD SEQUENCE DEFINITION

NFRAC=11
 POWER=2.5
 0.5
 1.0
 1.5
 2.0
 2.5
 3.0
 3.5
 4.0
 4.5
 5.0
 5.5

6.0
7.0
8.0
; 8.5
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPES5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_04.UTL DATE: 05/26/1999
 ; -----
 ; CALCULATIONS FOR STRUCTURE #4 AT KINDER LANE

CHANRAT
 TABLE#= 1540
 TYPE= 13

LABEL=ESTIMATE OF FLOW OVER THE ROAD AT KINDER LANE
 XSTAB#= 119
 BOTSLP=0.0008
 LENGTH= 45. MIDELEV= 404.00
 HEAD SEQUENCE FOR TABLE
 NFRAC= 21
 POWER= 2.5
 0.25
 0.5
 1.0
 1.5
 2.0
 2.5
 3.0
 3.5
 4.0
 4.5
 5.0
 5.5
 -1.0

MULCON
 TABLE#= 505 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING US OF STRUCTURE #4, KINDER LANE
 ; TWO CULVERTS ALMOST AT THE SAME ELEVATION, 2x24" RCPs
 ; 0.5' Silt at the bottom of the culvert #1, 1.0' AT CULVERT #2
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 2
 TYPE: CIRC CIRC
 SPAN: 2.00 2.00
 RISE: 2.00 2.00
 BOTT: 0.0 0.00
 ROUG: 0.015 0.015
 MUDL: 0.50 1.00
 ROUG: 0.035 0.035

MULCON
 TABLE#= 506 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING DS OF STRUCTURE #4, KINDER LANE
 ; TWO CULVERTS ALMOST AT THE SAME ELEVATION, 2x24" RCPs
 ; 0.5' Silt at the bottom of the culvert #1, 1.5' AT CULVERT #2
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 2
 TYPE: CIRC CIRC
 SPAN: 2.00 2.00
 RISE: 2.00 2.00
 BOTT: 0.0 0.00
 ROUG: 0.015 0.015
 MUDL: 0.50 1.50
 ROUG: 0.035 0.035

CULVERT
 TABLE#= 1040
 TYPE= 13
 LABEL= 2x24" RCP CULVERT AT KINDER LANE

APPROACH SECTION DATA
 APPTAB#= 116
 APPELV= 397.96
 APPLEN= 32.0
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
 ; CULVERT LENGTH APPROXIMATELY 65.0 FT.
 ; LOW CHORD U/S = 401.20, D/S = 400.82
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 200 UPSTRM 505 65.0 399.20

DNSTRM 506 0.0 398.82
 -1
 CULCLS=PIPE
 DEPARTURE SECTION DATA
 DEPTAB#= 122
 DEPELV= 398.11
 LOSOPT=MOMENTUM
 DISCHARGE COEFFICIENT DATA
 KRB=0.0
 KWING=0.00
 KPROJ=0.00
 C46=0.00
 TYPE 5 PARAMETERS
 RBVALUE= 0.00
 BVANGLE= 0.00
 WWANGLE= 0.0
 LPOVERD= 0.00
 TYPE5SBF= 0.75
 ROADWAY DESCRIPTION
 PLCWTB=9994
 GLCWTB=9995
 PHCWTB=9996
 GHCWTB=9997
 PSUBTB=9998
 GSUBTB=9999
 ; ONLY THE CENTERAL PORTION OF THE ROAD PROFILE IS
 ; INCLUDED IN THE CULVERT OVERFLOW CALCULATION. THE
 ; REST IS SIMULATED BY USING CHANRAT ROUTINE
 OFFSET CREST WIDTH APPROACH SURFACE
 ; -1150.0 410.00 45.0 408.00 PAVED
 ; -1000.0 404.00 45.0 403.00
 ; -675.0 404.00 45.0 403.00
 ; -525.0 404.00 45.0 403.00
 ; -450.0 404.10 45.0 402.00
 ; -350.0 404.00 45.0 403.00
 ; -275.0 406.00 45.0 404.00 PAVED
 -300.0 415.00 45.0 405.00 PAVED
 -213.0 415.00 45.0 405.00
 -213.0 417.00 45.0 403.00
 0.0 417.30 45.0 401.00
 188.0 417.00 45.0 403.00
 188.0 415.00 45.0 405.00
 300.0 415.00 45.0 405.00 END
 ; 200.0 408.00 45.0 406.00
 ; 275.0 409.00 45.0 407.00

```
;    350.0    408.00    45.0    407.00
;    550.0    406.50    45.0    406.00
;    800.0    408.00    45.0    407.00
;   950.0    408.00    45.0    407.00
; 1000.0    410.00    45.0    408.00 END
```

HEAD SEQUENCE DEFINITION

NFRAC=11

POWER=2.5

0.5

1.0

1.5

2.0

2.5

3.0

3.5

4.0

4.5

5.0

5.5

6.0

7.0

8.0

10.0

-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPOQZ 28
 WSROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_05.UTL DATE: 05/26/1999
 ; -----
 ; CALCULATIONS FOR STRUCTURE #5 AT JEROME LANE

CHANRAT
 TABLE#= 1550
 TYPE= 13

TABLE=ESTIMATE OF FLOW OVER THE ROAD AT JEROME LANE
 XSTAB#= 127
 ; FLOODPLAIN SLOPE APPROXIMATELY 0.0008 OR 4.225FT/MILE
 BOTSLP=0.0008
 LENGTH= 60. MIDELEV= 405.00
 HEAD SEQUENCE FOR TABLE
 NFRAC= 21
 POWER= 2.5
 0.25
 0.5
 1.0
 1.5
 2.0
 2.5
 3.0
 3.5
 4.0
 4.5
 5.0
 -1.0

MULCON
 TABLE#= 507 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING US OF STRUCTURE #5, JEROME LANE
 ; 0.3' Silt at the bottom of the culvert. 48" RCP
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: CIRC
 SPAN: 4.00
 RISE: 4.00
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 0.30
 ROUG: 0.035

MULCON
 TABLE#= 508 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING DS OF STRUCTURE #5, JEROME LANE
 ; 1.0' Silt at the bottom of the culvert. 48" RCP
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: BOX
 SPAN: 4.00
 RISE: 4.00
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 1.00
 ROUG: 0.035

CULVERT
 TABLE#= 1050
 TYPE= 13
 LABEL= 48" RCP CULVERT AT JEROME LANE
 APPROACH SECTION DATA
 APPTAB#= 124

APPELV= 399.20
 APPLEN= 32.0
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
 ; LOW CHORD U/S = 403.52, D/S = 403.32
 ; LENGTH OF CULVERT APPROXIMATELY 90 FT.
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 200 UPSTRM 507 90.0 399.52

DNSTRM 508 0.0 399.32
 -1
 CULCLS=PIPE
 DEPARTURE SECTION DATA
 DEPTAB#= 130
 DEPELV= 400.15
 LOSOPT=MOMENTUM
 DISCHARGE COEFFICIENT DATA
 KRB=0.0
 KWING=0.00
 KPROJ=0.00
 C46=0.00
 TYPE 5 PARAMETERS
 RBVALUE= 0.00
 BVANGLE= 0.00
 WWANGLE= 0.0
 LPOVERD= 0.00
 TYPE5SBF= 0.75
 ROADWAY DESCRIPTION
 PLCWTB=9994
 GLCWTB=9995
 PHCWTB=9996
 GHCWTB=9997
 PSUBTB=9998
 GSUBTB=9999
 ; ASSUME ROAD OVERFLOW SIMULATED BY CHANRAT. THUS
 ; ASSUME SUFFICIENT HIGH CREST FOR THE WEIR TO DISALLOW
 ; FLOW OVER THE ROAD IN THE CULVERT ROUTINE

OFFSET	CREST	WIDTH	APPROACH SURFACE
-260.0	418.30	60.0	403.00 PAVED
-50.0	418.00	60.0	395.00
0.0	417.80	60.0	401.00
244.0	418.00	60.0	403.00 END

HEAD SEQUENCE DEFINITION

NFRAC=11
 POWER=2.5
 0.5
 1.0
 1.5
 2.0
 2.5
 3.0
 3.5
 4.0
 4.5
 5.0

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5.5
6.0
7.0
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPOX 27
 WSPOQZ 28
 WSPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTAB
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_06.UTL DATE: 05/26/1999

; -----
; CALCULATIONS FOR STRUCTURE #6 AT EDGAR STREET

CHANRAT
 TABLE#= 1560
 TYPE= 13

LABEL=ESTIMATE OF FLOW OVER THE ROAD AT EDGAR ST.
XSTAB#= 135
; FLOODPLAIN SLOPE APPROXIMATELY 0.0008 OR 4.225FT/MILE
BOTSLP=0.0008
LENGTH= 60. MIDELEV= 403.90
HEAD SEQUENCE FOR TABLE
NFRAC= 21
POWER= 2.5
0.25
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
6.0
-1.0

MULCON
TABLE#= 509 SAVE22 OLDBETA NOOUT
; CULVERT OPENING US OF STRUCTURE #6, EDGAR STREET CULVERT
; 0.5' Silt at the bottom of the culvert. 24" RCP
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: CIRC
SPAN: 2.00
RISE: 2.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.50
ROUG: 0.035

MULCON
TABLE#= 510 SAVE22 OLDBETA NOOUT
; CULVERT OPENING DS OF STRUCTURE #6, EDGAR ST. CULVERT
; 0.0' Silt at the bottom of the culvert. 24" RCP
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: CIRC
SPAN: 2.00
RISE: 2.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.00
ROUG: 0.035

CULVERT
TABLE#= 1060
TYPE= 13
LABEL= 24" RCP CULVERT AT EDGAR STREET
APPROACH SECTION DATA

APPTAB#= 132
 APPELV= 398.20
 APPLEN= 32.0
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
 ; LOW CHORD OF U/S = 401.22, LOW CHORD OF D/S = 400.99
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 200 UPSTRM 509 40.0 399.22

DNSTRM 510 0.0 398.99
 -1
 CULCLS=PIPE
 DEPARTURE SECTION DATA
 DEPTAB#= 138
 DEPELV= 397.89
 LOSOPT=MOMENTUM
 DISCHARGE COEFFICIENT DATA
 KRB=0.0
 KWING=0.00
 KPROJ=0.00
 C46=0.00
 TYPE 5 PARAMETERS
 RBVALUE= 0.00
 BVANGLE= 0.00
 WWANGLE= 0.0
 LPOVERD= 0.00
 TYPE5SBF= 0.75
 ROADWAY DESCRIPTION
 PLCWTB=9994
 GLCWTB=9995
 PHCWTB=9996
 GHCWTB=9997
 PSUBTB=9998
 GSUBTB=9999
 ; FLOW OVER THE ROAD TO BE ESTIMATED BY CHANRAT
 OFFSET CREST WIDTH APPROACH SURFACE
 -450 417.00 30.0 403.00 PAVED
 -200 413.90 30.0 395.00
 0 414.20 30.0 401.00
 260 415.40 30.0 403.00 END

HEAD SEQUENCE DEFINITION
 NFRAC=11
 POWER=2.5
 ; 0.5
 1.0
 1.5
 2.0
 2.5
 3.0
 3.5
 4.0
 4.5
 5.0
 5.5
 6.0

7.0
8.0
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPOQZ 28
 WSPPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_07.UTL DATE: 05/26/1999

; -----
; CALCULATIONS FOR STRUCTURE #7 AT Route 157

CHANRAT
TABLE#= 1570

TYPE= 13
LABEL=ESTIMATE OF FLOW OVER THE ROAD AT ROUTE 157
XSTAB#= 143
; FLOODPLAIN SLOPE APPROXIMATELY 0.0008 OR 4.225FT/MILE
BOTSLP=0.0008
LENGTH= 47.5 MIDELEV= 407.80
HEAD SEQUENCE FOR TABLE
NFRAC= 21
POWER= 2.5
0.25
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
6.0
-1.0

MULCON
TABLE#= 511 SAVE22 OLDBETA NOOUT
; CONCRETE BOX CULVERT OPENING US OF STRUCTURE #7, ROUTE 157
; 1.9' Silt at the bottom of the US culvert 6.8 (W) x 6.0 (H)
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 6.80
RISE: 6.00
BOTT: 0.0
ROUG: 0.015
MUDL: 1.90
ROUG: 0.035

MULCON
TABLE#= 512 SAVE22 OLDBETA NOOUT
; CONCRETE BOX CULVERT OPENING DS OF STRUCTURE #7, ROUTE 157
; 2.5' Silt at the bottom of the DS culvert 6.8 (W) x 6.0 (H)
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 6.80
RISE: 6.00
BOTT: 0.0
ROUG: 0.015
MUDL: 2.50
ROUG: 0.035

CULVERT
TABLE#= 1070
TYPE= 13
LABEL= 6.8 x 6.0 CONCRETE BOX CULVERT AT ROUTE 157
APPROACH SECTION DATA

APPTAB#= 140
 APPELV= 398.76
 APPLEN= 16.0
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
 ; ASSUME LOW CHORD ELEVATION OF 402.85 U/S, AND 401.90 D/S
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 200 UPSTRM 511 170.0 398.75

DNSTRM 512 0.0 398.40
 -1
 CULCLS=BOX
 DEPARTURE SECTION DATA
 DEPTAB#= 146
 DEPELV= 398.46
 LOSOPT=MOMENTUM
 DISCHARGE COEFFICIENT DATA
 KRB=0.0
 KWING=0.00
 KPROJ=0.00
 C46=0.00
 TYPE 5 PARAMETERS
 RBVALUE= 0.00
 BVANGLE= 0.00
 WWANGLE= 0.0
 LPOVERD= 0.00
 TYPE5SBF= 0.75
 ROADWAY DESCRIPTION
 PLCWTB=9994
 GLCWTB=9995
 PHCWTB=9996
 GHCWTB=9997
 PSUBTB=9998
 GSUBTB=9999
 ; FLOW OVER THE ROAD TO BE SIMULATED BY CHANRAT. SO
 ; THE CREST ELEVATION WAS FABRICATED TO QUITE HIGH
 ; TO DISALLOW FLOW OVER THE ROAD IN THE CULVERT ROUTINE
 OFFSET CREST WIDTH APPROACH SURFACE
 -260.0 418.30 47.5 403.00 PAVED
 -50.0 418.00 47.5 395.00
 0.0 417.80 47.5 401.00
 244.0 418.00 47.5 403.00 END

HEAD SEQUENCE DEFINITION

NFRAC=11
 POWER=2.5
 0.5
 1.0
 1.5
 2.0
 2.5
 3.0
 3.5
 4.0
 4.5
 5.0

5.5
6.0
7.0
8.0
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.25
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_08.UTL DATE: 05/25/1999
 ; -----
 ; CALCULATIONS FOR STRUCTURE #8 AT ROUTE 3.

MULCON
 TABLE#= 513 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING US OF STRUCTURE #8, Old Route 3

```

; Silt at the bottom of the culvert. Assume opening 4' x 7'
; Concrete boxed culvert
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 7.00
RISE: 4.00
BOTT: 0.0
ROUG: 0.015
MUDL: 1.00
ROUG: 0.035

MULCON
TABLE#= 514 SAVE22 OLDBETA NOOUT
; CULVERT OPENING DS OF STRUCTURE #8, Old Route 3
; Silt at the bottom of the culvert. Assume opening 4' x 7'
; Concrete boxed culvert
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 7.00
RISE: 4.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.70
ROUG: 0.035

```

```

CULVERT
TABLE#= 1080
TYPE= 13
LABEL=4' x 7' Boxed Concrete Culvert, Old Route 3
APPROACH SECTION DATA
APPTAB#= 148
APPELV= 398.14
APPLEN= 20.0
; APPLOS assumed to be 0.2 due to trash at the entrance
APPLOS=0.2
APPEXP=0.70
CULVERT DESCRIPTION
NODEID=YES
SFAC=1.0
; ASSUME LOW CHORD AT US OF 402.56, AND D/S OF 401.00
NODE NODEID XNUM STATION ELEVATION KA KD HTAB
200 UPSTRM 513 165.0 398.56

```

```

DNSTRM 514 0.0 397.00
-1
CULCLS=BOX
DEPARTURE SECTION DATA
DEPTAB#= 154
DEPELV= 398.04
LOSOPT=MOMENTUM
DISCHARGE COEFFICIENT DATA
KRB=0.0
KWING=0.00

```

KPROJ=0.00
C46=0.00
TYPE 5 PARAMETERS
RBVALUE= 0.00
BVANGLE= 0.00
WWANGLE= 60.0
LPOVERD= 0.00
TYPE5SBF= 0.90
ROADWAY DESCRIPTION
PLCWTB=9994
GLCWTB=9995
PHCWTB=9996
GHCWTB=9997
PSUBTB=9998
GSUBTB=9999

OFFSET	CREST	WIDTH	APPROACH	SURFACE
-600.0	409.00	47.5	405.00	PAVED
-200.0	407.50	47.5	403.00	
-117.7	405.19	47.5	395.00	
0	407.59	47.5	401.00	
102.6	407.62	47.5	403.00	
400.0	410.00	47.5	407.00	END
;	-200.0	427.50	47.5	403.00
;	-117.7	425.19	47.5	395.00
;	0	427.59	47.5	401.00
;	102.6	427.62	47.5	403.00

HEAD SEQUENCE DEFINITION

NFRAC=11
POWER=1.5
;0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
7.0
8.0
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABLES
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_09.UTL DATE: 05/25/1999

; -----
 ; CROSS SECTIONS AND CULVERT INPUT FOR STRUCTURE #9
 ; AT OLD ROUTE 3

MULCON
 TABLE#= 515 SAVE22 OLDBETA NOOUT

; CULVERT OPENING US OF STRUCTURE #9, Old Route 3
; 0.6' Silt at the bottom of the culvert. Assume opening 6' x 7'
; Concrete boxed culvert
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 7.00
RISE: 6.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.60
ROUG: 0.035

MULCON

TABLE#= 516 SAVE22 OLDBETA NOOUT
; CULVERT OPENING DS OF STRUCTURE #9, Old Route 3
; 1.0' Silt at the bottom of the culvert. Assume opening 6' x 7'
; Concrete boxed culvert
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 7.00
RISE: 6.00
BOTT: 0.0
ROUG: 0.015
MUDL: 1.00
ROUG: 0.035

CULVERT

TABLE#= 1090
TYPE= 13
LABEL=6' x 7' Boxed Concrete Culvert, Old Route 3
APPROACH SECTION DATA
APPTAB#= 156
APPELV= 397.99
APPLEN= 20.0
APPLOS=0.0
APPEXP=1.0
CULVERT DESCRIPTION
NODEID=YES
SFAC=1.0
; ASSUME LOW CHORD AT US OF 402.85, AND D/S OF 403.40
; LENGTH OF THE CULVERT APPROXIMATELY 65.0 FT.
NODE NODEID XNUM STATION ELEVATION KA KD HTAB
200 UPSTRM 515 65.0 396.85

DNSTRM 516 0.0 397.00
-1
CULCLS=BOX
DEPARTURE SECTION DATA
DEPTAB#= 162
DEPELV= 398.29
LOSOPT=MOMENTUM
DISCHARGE COEFFICIENT DATA
KRB=0.0

KWING=0.00
KPROJ=0.00
C46=0.00

TYPE 5 PARAMETERS

RBVALUE= 0.00
BVANGLE= 0.00
WWANGLE= 0.0
LPOVERD= 0.00
TYPE5SBF= 0.75

ROADWAY DESCRIPTION

PLCWTB=9994
GLCWTB=9995
PHCWTB=9996
GHCWTB=9997
PSUBTB=9998
GSUBTB=9999

OFFSET	CREST	WIDTH	APPROACH	SURFACE
-400	409.00	62.5	406.00	PAVED
-138	407.80	62.5	403.00	
-22	408.00	62.5	401.00	
0	408.10	62.5	398.00	
62	407.80	62.5	398.00	
69	406.00	62.5	398.00	
150	405.00	62.5	401.00	
250	408.00	62.5	403.00	
400	410.00	62.5	406.00	END

HEAD SEQUENCE DEFINITION

NFRAC=11

POWER=2.5

0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
7.0
8.0
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPOX 27
 WSPOQZ 28
 WSPO14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

; FILE NAME: STRUC_10.UTL DATE: 05/25/1999

; -----
; CROSS SECTIONS AND CULVERT INPUT FOR STRUCTURE #10
; AT CARGILL ELEVATOR RD

MULCON
 TABLE#= 517 SAVE22 OLDBETA NOOUT

; CULVERT OPENING US OF STRUCTURE #10
; No silt at the upstream end of the culvert. Trees everywhere.
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: CIRC
SPAN: 4.00
RISE: 4.00
BOTT: 0.0
ROUG: 0.020
MUDL: 0.00
ROUG: 0.035

MULCON
TABLE#= 518 SAVE22 OLDBETA NOOUT
; CULVERT OPENING DS OF STRUCTURE #10
; 2" silt at downstream end of the culvert
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: CIRC
SPAN: 4.00
RISE: 4.00
BOTT: 0.0
ROUG: 0.020
MUDL: 0.16
ROUG: 0.035

CULVERT
TABLE#= 1100
TYPE= 13
LABEL=48" CMP PIPE AT CARGILL ELEVATOR ROAD
APPROACH SECTION DATA
APPTAB#= 164
APPELV= 397.61
APPLEN= 42.5
APPLOS=0.0
APPEXP=1.0
CULVERT DESCRIPTION
NODEID=YES
SFAC=1.0
; ASSUME CULVERT LENGTH OF APPROXIMATELY 50.0 FT.
NODE NODEID XNUM STATION ELEVATION KA KD HTAB
100 UPSTRM 517 50.0 396.29

DNSTRM 518 0.0 396.51
-1
CULCLS=PIPE
DEPARTURE SECTION DATA
DEPTAB#= 170
DEPELV= 396.48
LOSOPT=MOMENTUM
DISCHARGE COEFFICIENT DATA
KRB=0.0
KWING=0.00
KPROJ=0.00
C46=0.00

TYPE 5 PARAMETERS

RBVALUE= 0.00

BVANGLE= 0.00

WWANGLE= 0.00

LPOVERD= 0.00

TYPE5SBF= 0.75

ROADWAY DESCRIPTION

PLCWTB=9994

GLCWTB=9995

PHCWTB=9996

GHCWTB=9997

PSUBTB=9998

GSUBTB=9999

OFFSET	CREST	WIDTH	APPROACH	SURFACE
-225	412.00	47.5	407.0	PAVED
-161	410.00	47.5	405.0	
-119	408.00	47.5	405.0	
-48	407.36	47.5	403.0	
0	407.30	47.5	400.0	
77	408.00	47.5	403.0	
150	414.76	47.5	410.0	END

HEAD SEQUENCE DEFINITION

NFRAC=11

POWER=2.5

0.5

1.0

1.5

2.0

2.5

3.0

3.5

4.0

4.5

5.0

5.5

6.0

6.5

7.0

7.5

8.0

8.5

9.0

9.5

10.0

-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPOX 27
 WSPOQZ 28
 WSPPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSPF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

; FILE NAME: Struc_11.UTL DATE: 05/25/1999
 ; THIS FILE CONTAINS COMPUTATIONS FOR Structure #11
 ; ON THE DEAD CREAK

FTABIN
 TABLE#= -15WEIRTABLES
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

 ; CROSS SECTIONS AND CULVERT INPUT FOR STRUCTURE #11
 ; AT TERMINAL RR RD

MULCON
 TABLE#= 519 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING US OF STRUCTURE #11
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: CIRC
 SPAN: 4.50
 RISE: 4.50
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 0.50
 ROUG: 0.035

MULCON
 TABLE#= 520 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING DS OF STRUCTURE #11
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: CIRC
 SPAN: 4.50
 RISE: 4.50
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 0.50
 ROUG: 0.035

CULVERT
 TABLE#= 1110
 TYPE= 13
 LABEL=4.5' STEEL PIPE WITH MUDLINE AT AT LEAST 0.5' DEEP
 APPROACH SECTION DATA
 APPTAB#= 172
 APPELV= 396.44
 APPLEN= 110.
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
 ; ASSUME LOW CHORD ELEV. OF U/S OF 399.18, AND D/S OF 399.10
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 100 UPSTRM 519 35.0 394.68

DNSTRM 520 0.0 394.60

-1
 CULCLS=PIPE
 DEPARTURE SECTION DATA
 DEPTAB#= 178
 DEPELV= 396.02
 LOSOPT=MOMENTUM
 DISCHARGE COEFFICIENT DATA
 KRB=0.0
 KWING=0.00
 KPROJ=0.00

C46=0.00
TYPE 5 PARAMETERS
RVALUE= 0.00
BVANGLE= 0.00
WWANGLE= 0.0
LPOVERD= 0.00
TYPE5SBF= 0.75

ROADWAY DESCRIPTION

PLCWTB=9994
GLCWTB=9995
PHCWTB=9996
GHCWTB=9997
PSUBTB=9998
GSUBTB=9999

OFFSET	CREST	WIDTH	APPROACH	SURFACE
-100.0	415.00	105.0	408.0	GRAVEL
-54.0	414.67	105.0	407.0	
-36.6	414.82	105.0	405.0	
0.0	414.72	105.0	405.0	
35.0	414.87	105.0	405.0	
105.0	415.00	105.0	408.0	END

HEAD SEQUENCE DEFINITION

NFRAC=11
POWER=2.5

; 0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
10.0
-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WS PROQZ 28
 WS PROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

; FILE NAME: Struc_12.UTL DATE: 05/25/1999
 ; THIS FILE CONTAINS COMPUTATIONS FOR Structure #12
 ; ON THE DEAD CREEK

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -15..\XSECTION\XS_DDCRK.TAB
 TABLE#= -1

MULCON
 TABLE#= 521 SAVE22 OLDBETA NOOUT

; CULVERT OPENING US OF STRUCTURE #12, BOX 10' x 8' At Levin St.
; 0.5' MUD according to the survey
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 10.00
RISE: 8.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.50
ROUG: 0.035

MULCON
TABLE#= 522 SAVE22 OLDBETA NOOUT
; CULVERT OPENING DS OF STRUCTURE #12
WSLOT= 0.01
HSLOT= 50.0
NPIPES= 1
TYPE: BOX
SPAN: 10.00
RISE: 8.00
BOTT: 0.0
ROUG: 0.015
MUDL: 0.50
ROUG: 0.035

CULVERT
TABLE#= 1120
TYPE= 13
LABEL=10'x8' CONCRETE BOX CULVERT AT LEVIN ST.
APPROACH SECTION DATA
APPTAB#= 180
APPELV= 391.97
APPLEN= 30.0
APPLOS=0.0
APPEXP=1.0
CULVERT DESCRIPTION
NODEID=YES
SFAC=1.0
; LOW CHORD ELEV. OF U/S OF 401.30, AND D/S OF 401.15
NODE NODEID XNUM STATION ELEVATION KA KD HTAB
100 UPSTRM 521 55.0 393.30

DNSTRM 522 0.0 393.15
-1
CULCLS=BOX
DEPARTURE SECTION DATA
DEPTAB#= 186
DEPELV= 393.62
LOSOPT=MOMENTUM
DISCHARGE COEFFICIENT DATA
KRB=0.0
KWING=0.00
KPROJ=0.00
C46=0.00
TYPE 5 PARAMETERS

RBVALUE= 0.00

BVANGLE= 0.00

WWANGLE= 0.0

LPOVERD= 0.00

TYPE5SBF= 0.75

ROADWAY DESCRIPTION

PLCWTB=9994

GLCWTB=9995

PHCWTB=9996

GHCWTB=9997

PSUBTB=9998

GSUBTB=9999

OFFSET	CREST	WIDTH	APPROACH	SURFACE
-227.00	410.00	35.0	395.0	GRAVEL
-130.33	407.68	35.0	395.0	
0.00	407.14	35.0	395.0	
85.05	409.56	35.0	395.0	
101.00	410.00	35.0	395.0	END

HEAD SEQUENCE DEFINITION

NFRAC=11

POWER=2.5

0.5

1.0

1.5

2.0

2.5

3.0

3.5

4.0

4.5

5.0

5.5

6.0

6.5

7.0

7.5

8.0

9.0

10.0

-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSFPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -1

; FILE NAME: PARK-C.UTL DATE: 05/26/1999

; -----
; CALCULATIONS FOR STRUCTURE #6A AT PARK COLLEGE CULVERT

FEQX
 TABLE#= 0190 NEWBETAM SAVE22 NOOUT
 STATION=1.711
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050

; XS1 OF PARKS COLLEGE CULVERT

OFFSET ELEVATION SUB

-69	408.00	1	EXTENDED PT
-19	405.50	2	NAIL 6A
-6	399.41	3	TOE DITCH L
0	398.59	3	FL DITCH
8.2	399.68	3	TOE DITCH R
10.3	402.51	4	NAIL 6A
70	406.00	4	EXTENDED PT
100	406.50	5	
300	407.50	-1	EXTENDED PT

FEQX

TABLE#= 0192 NEWBETAM SAVE22 NOOUT

STATION=1.708

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 3 0.095 0.065 0.095

; XS2 OF PARKS COLLEGE CULVERT

OFFSET ELEVATION SUB

-4.8	404.76	2	NAIL 6B
0	399.64	2	TOE DITCH L
4.9	401.30	2	TOP EXPOSED PIPE
12.2	400.01	2	TOE DITCH R
12.2	402.29	-1	NAIL 6B

FEQX

TABLE#= 0193 NEWBETAM SAVE22 NOOUT

STATION=1.666

NAVM=00000 SCALE= 1.0 SHIFT= 0.0

NSUB 3 0.095 0.065 0.095

; PARKS COLLEGE CULVERT - TOP OF RD PROFILE

OFFSET ELEVATION SUB

; THIS CROSS SECTION WILL BE USED FOR CHANRAT ROUTINE
; TO CALCULATE OVERTANK FLOW ABOVE THE CULVERT

-692.64	410.53	1	3238
-654.16	408.54	1	3014
-618.95	405.26	1	3239
-602.36	404.84	1	3240
-591.97	403.65	1	3242
-531.71	404.81	1	3243
-531.71	405.06	1	3244
-478.02	404.85	1	3245
-424.22	404.33	1	3246
-368.2	404.90	2	3247
-311.58	405.17	2	3248
-254.42	405.42	2	3249
-195.99	405.21	2	3250
-125.32	405.22	2	3251
-65.01	403.90	2	3252
0	403.75	2	3253
61.97	404.56	2	3254
120.97	405.25	2	3255
153.78	405.04	3	3257
219.84	405.42	3	3258
249.97	405.42	3	3259
278.61	403.35	3	3260
301.32	405.85	3	3261
383.08	405.75	-1	3262

FEQX

TABLE#= 0194 NEWBETAM SAVE22 NOOUT

STATION=1.578
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 3 0.095 0.065 0.095
 ; XS3 OF PARKS COLLEGE CULVERT
 OFFSET ELEVATION SUB
 -4.7 404.15 2 NAIL 6C
 0 399.44 2 TOE DITCH L
 3.2 400.76 2 TOP EXPOSED PIPE
 8 399.61 2 TOE DITCH R
 16.2 403.21 -1 NAIL 6C

FEQX
 TABLE#= 0196 NEWBETAM SAVE22 NOOUT
 STATION=1.575
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; XS4 OF PARKS COLLEGE CULVERT
 OFFSET ELEVATION SUB
 -150.0 410.00 1 EXTENDED, YXL
 -39.2 408.00 2 EXTENDED PT
 -12.2 403.75 2 NAIL 6D
 -4.9 399.98 3 TOE DITCH L
 0 398.31 3 TOE EXPOSED PIPE
 4.8 399.91 4 TOE DITCH R
 8.7 402.96 4 NAIL 6D
 130 406.00 5 EXTENDED PT
 361 407.50 5 EXTENDED PT
 400 410.00 -1 EXTENDED, YXL

MULCON
 TABLE#= 561 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING US OF STRUCTURE #6, PARK COLLEGE CULVERT
 ; 1.1' Silt at the bottom of the culvert. 42" CMP
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: CIRC
 SPAN: 3.50
 RISE: 3.50
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 1.10
 ROUG: 0.035

MULCON
 TABLE#= 562 SAVE22 OLDBETA NOOUT
 ; CULVERT OPENING DS OF STRUCTURE #6, PARK COLLEGE CULVERT
 ; 1.1' Silt at the bottom of the culvert. 42" CMP
 WSLOT= 0.01
 HSLOT= 50.0
 NPIPES= 1
 TYPE: CIRC
 SPAN: 3.50
 RISE: 3.50
 BOTT: 0.0
 ROUG: 0.015
 MUDL: 1.10
 ROUG: 0.035

CULVERT
 TABLE#= 1140
 TYPE= 13
 LABEL= 42" CMP CULVERT AT PARK COLLEGE
 APPROACH SECTION DATA
 APPTAB#= 190
 APPELV= 398.59
 APPLEN= 20.0
 APPLOS=0.0
 APPEXP=1.0
 CULVERT DESCRIPTION
 NODEID=YES
 SFAC=1.0
; LOW CHORD OF U/S = 401.30, LOW CHORD OF D/S = 400.76
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB
 200 UPSTRM 561 680.0 397.80

DNSTRM 562 0.0 397.26
-1
CULCLS=PIPE
DEPARTURE SECTION DATA
DEPTAB#= 196
DEPELV= 398.31
LOSOPT=MOMENTUM
DISCHARGE COEFFICIENT DATA
KRB=0.0
KWING=0.00
KPROJ=0.00
C46=0.00
TYPE 5 PARAMETERS
RBVALUE= 0.00
BVANGLE= 0.00
WWANGLE= 0.0
LPOVERD= 0.00
TYPE5SBF= 0.75
ROADWAY DESCRIPTION
PLCWTB=9994
GLCWTB=9995
PHCWTB=9996
GHCWTB=9997
PSUBTB=9998
GSUBTB=9999
; CREST ASSUMED 450.00 TO ASSURE NO FLOW OVER THE ROAD
; FLOW OVER THE ROAD/FLOODPLAIN IS SIMULATED BY CHANRAT
 OFFSET CREST WIDTH APPROACH SURFACE
 -692.64 450.00 47.5 403.00 PAVED
 -654.16 450.00 47.5 403.00 PAVED
 -618.95 450.00 47.5 403.00 PAVED
 -602.36 450.00 47.5 403.00 PAVED
 -591.97 450.00 47.5 403.00 PAVED
 -531.71 450.00 47.5 403.00 PAVED
 -531.71 450.00 47.5 403.00 PAVED
 -478.02 450.00 47.5 403.00 PAVED

-424.22	450.00	47.5	403.00	PAVED
-368.2	450.00	47.5	403.00	PAVED
-311.58	450.00	47.5	403.00	PAVED
-254.42	450.00	47.5	403.00	PAVED
-195.99	450.00	47.5	403.00	PAVED
-125.32	450.00	47.5	403.00	PAVED
-65.01	450.00	47.5	403.00	PAVED
0	450.00	47.5	403.00	PAVED
61.97	450.00	47.5	403.00	PAVED
120.97	450.00	47.5	403.00	PAVED
153.78	450.00	47.5	403.00	PAVED
219.84	450.00	47.5	403.00	PAVED
249.97	450.00	47.5	403.00	PAVED
278.61	450.00	47.5	403.00	PAVED
301.32	450.00	47.5	403.00	PAVED
383.08	450.00	47.5	403.00	END

HEAD SEQUENCE DEFINITION

NFRAC=11

POWER=2.5

0.5

1.0

1.5

2.0

2.5

3.0

3.5

4.0

4.5

5.0

5.5

6.0

7.0

8.0

9.0

-1

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 34
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSPPROT14 29
 UFGATE 30
 RISERCLV 31
 ORIFICE 32
 AXIALPMP 33
 PUMPLOSS 34
 SETSLOT 35
 CLRSLOT 36
 UFGCULV 38
 DZLIM= 0.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF= 1.E-4 EPSABS= 1.E-4
 EXTEND=NO

FTABIN
 TABLE#= -15WEIRTABS
 TABLE#= -15TYPE5.TAB
 TABLE#= -1

; CHANRAT to create a 2D table for flow over the Park College floodplain
 ; above the culvert

FEQX
 TABLE#= 0193 NEWBETAM SAVE22 NOOUT
 STATION=1.666
 NAVM=00000 SCALE= 1.0 SHIFT= 0.0
 NSUB 5 0.045 0.095 0.060 0.095 0.050
 ; PARKS COLLEGE CULVERT - TOP OF RD PROFILE
 OFFSET ELEVATION SUB

; CROSS SECTION ABOVE THE PARK COLLEGE CULVERT. USE A CONSTANT
; MANNING'S COEFFICIENT OF 0.045

-692.64	410.53	1	3238
-654.16	408.54	1	3014
-618.95	405.26	1	3239
-602.36	404.84	1	3240
-591.97	403.65	1	3242
-531.71	404.81	1	3243
-531.71	405.06	1	3244
-478.02	404.85	1	3245
-424.22	404.33	1	3246
-368.2	404.90	1	3247
-311.58	405.17	1	3248
-254.42	405.42	1	3249
-195.99	405.21	1	3250
-125.32	405.22	1	3251
-65.01	403.90	1	3252
0	403.75	1	3253
61.97	404.56	1	3254
120.97	405.25	1	3255
153.78	405.04	1	3257
219.84	405.42	1	3258
249.97	405.42	1	3259
278.61	403.35	1	3260
301.32	405.85	1	3261
383.08	405.75	1	3262
400.00	410.00	-1	Last point extended yxl

CHANRAT
TABLE#= 1240
TYPE= 13
LABEL=ESTIMATE OF FLOW OVER THE FLOODPLAIN AT PARK COLLEGE
XSTAB#= 193
BOTSLP=0.0008
; BOTTOM SLOPE OF 0.0008 IS APPROXIMATE.
LENGTH= 680. M1DELEV= 403.75
HEAD SEQUENCE FOR TABLE
NFRAC= 21
POWER= 2.5
0.25
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
6.0
6.5
-1.0

FINISH

STDIN= 5 The values on these
 STDOUT= 6 three line are no longer used but
 STDTAB= 7 the lines must be present.
 UNITS= ENGLISH
 NCMD= 27
 FEQX 1
 FLOODWAY 2
 BRIDGE 3
 CULVERT 4
 FINISH 5
 SAME 6
 FEQXLST 8
 ROADFLOW 9
 SEWER 10
 MULPIPES 11
 FTABIN 12
 EMBANKQ 13
 JUMP 14
 CRITQ 15
 GRITTER 16
 MULCON 18
 CHANRAT 19
 EXPCON 20
 HEC2X 21
 QCLIMIT 22
 XSINTERP 23
 FEQXEXT 25
 CHANNEL 26
 WSPROX 27
 WSPROQZ 28
 WSPROT14 29
 UFGATE 30
 DZLIM= 2.5
 NRZERO= 0.08
 USGSBETA=NO
 EPSARG=5.E-5
 EPSF=1.E-4
 EXTEND=NO

FTABIN
 TABLE#= 9994
 TYPE= -2
 REFL=0.0

HEAD	WEIR	COEF	PAVED	LOW	WEIR	COEFFICIENT
0.0		2.83				
0.1		2.93				
0.2		2.97				
0.3		2.99				
0.4		3.01				
0.5		3.02				
0.7		3.03				
1.0		3.035				
2.0		3.04				
4.0		3.05				
10.0		3.05				

-1.0
 TABLE#= 9995
 TYPE= -2
 REFL=0.0

HEAD	WEIR	COEF	GRAVEL	LOW	WEIR	COEFFICIENT
0.0		2.50				

0.3	2.61
0.6	2.68
0.9	2.80
1.2	2.87
1.5	2.92
2.0	2.98
2.5	3.02
3.0	3.04
3.2	3.046
4.0	3.05
10.0	3.05

-1.0

TABLE#= 9996
TYPE= -2
REFL=0.0

RATIO	WEIR COEF PAVED HIGH HEAD WEIR COEFFICIENT
0.15	3.05
0.17	3.062
0.19	3.071
0.22	3.081
0.26	3.088
0.28	3.090
10.00	3.090

-1.0

TABLE#= 9997
TYPE= -2
REFL=0.0

RATIO	WEIR COEF GRAVEL HIGH HEAD WEIR COEFFICIENT
0.15	2.95
0.26	3.072
0.28	3.078
0.30	3.088
0.31	3.09
10.0	3.09

-1.0

TABLE#= 9998
TYPE= -2
REFL=0.0

RATIO	FRACTION PAVED SUBMERGENCE REDUCTION FACTOR
0.0	1.0
0.8	1.0
0.82	0.997
0.84	0.987
0.86	0.975
0.88	0.956
0.90	0.928
0.92	0.887
0.94	0.820
0.96	0.720
0.98	0.57
0.984	0.50
1.0	0.0

-1.0

TABLE#= 9999
TYPE= -2
REFL=0.0

RATIO	FRACTION GRAVELED SUBMERGENCE REDUCTION FACTOR
0.0	1.0
0.7	1.0
0.74	0.998
0.78	0.992
0.80	0.986

0.82	0.974
0.84	0.960
0.86	0.94
0.88	0.915
0.90	0.88
0.92	0.82
0.94	0.732
0.96	0.612
0.975	0.500
1.0	0.0

-1.0
 TABLE#= -15\USF\FEQUTL\TYPE5.TAB
 TABLE#= -1

EMBANKQ
 TABLE#= 3012 13
 PLCWTB= 9994
 GLCWTB= 9995
 PHCWTB= 9996
 GHCWTB= 9997
 PSUBTB= 9998
 GSUBTB= 9999
 LABEL= MTPPOOL TO PENPOOL
 ; Labels for tables are highly recommended.

OFFSET	CREST	WIDTH	APPROACH SURFACE
-650.0	402.00	10.	399.00 GRAVEL
0.0	402.00	10.	399.00 GRAVEL
650.0	402.00	10.	399.00 END

 UPSTREAM HEADS TO USE IN COMPUTING THE TABLE
 NFRAC= 21
 POWER= 2.0
 0.10
 0.20
 0.30
 0.40
 0.50
 0.75
 1.00
 1.50
 2.00
 3.00
 4.00
 5.00
 6.00
 -1.

 FTABIN
 TABLE#= 8994
 TYPE= 2
 REFL=0.0

HEAD	WEIR	COEF	low head coefficient. smooth (PAVED)
0.0		2.65	
10.0		2.65	

 -1.0
 TABLE#= 8995
 TYPE= 2
 REFL=0.0

HEAD	WEIR	COEF	low head coeff. rough (GRAVEL)
0.0		2.65	
10.0		2.65	

 -1.0

TABLE#= 8996

TYPE= 2

REFL=0.0

RATIO WEIR COEF PAVED HIGH HEAD Table 5-3 Brater and King

0.0	2.80
0.2	2.80
0.4	2.92
0.6	3.08
0.8	3.30
1.0	3.32
999.0	3.32

-1.0

TABLE#= 8997

TYPE= 2

REFL=0.0

RATIO WEIR COEF GRAVEL HIGH HEAD Table 5-3 Brater and King

0.0	2.80
0.2	2.80
0.4	2.92
0.6	3.08
0.8	3.30
1.0	3.32
999.0	3.32

-1.0

TABLE#= 8998

TYPE= -2

REFL=0.0

RATIO FRACTION APPROX. SUBMERGENCE FOR SHARP CRESTED WEIR

0.0	1.0
0.1	0.988
0.2	0.965
0.3	0.933
0.4	0.894
0.5	0.845
0.6	0.786
0.7	0.712
0.75	0.668
0.80	0.615
0.85	0.555
0.90	0.477
0.95	0.367
1.0	0.0

-1.0

TABLE#= 8999

TYPE= -2

REFL=0.0

RATIO FRACTION APPROX. SUBMERGENCE FOR SHARP CRESTED WEIR

0.0	1.0
0.1	0.988
0.2	0.965
0.3	0.933
0.4	0.894
0.5	0.845
0.6	0.786
0.7	0.712
0.75	0.668
0.80	0.615
0.85	0.555
0.90	0.477
0.95	0.367
1.0	0.0

-1.0

TABLE#= -1

FINISH

Appendix D

))

Appendix D
RESERVOIRS STORAGE AND FLOW RATING 1D TABLES

TABLE#= 3001
; Stage-STORAGE RATING TABLE FOR THE UPSTREAM OF QUEENY ST.

TYPE= -2
REFL= .00FAC= 43560.0

HEAD	STORAGE	
401.40	0.00	0.00
404.00	5.08	0.50
406.00	14.78	1.48
408.00	45.57	4.56
410.00	110.57	11.06
	-1.0	

TABLE#= 3002
; OUTFLOW RATING CURVE FOR THE UPSTREAM OF QUEENY ST.

TYPE= -2
REFL= .00 FAC= 1.0

ELEVATION	FLOW	
0.00	0.00	402.00
2.50	8.88	404.50
4.00	8.88	406.00
6.00	8.88	408.00
7.00	500.00	409.00
8.00	3400.00	410.00
	-1	

; TABLE#= 3301
; Stage-STORAGE RATING TABLE FOR UPSTREAM OF JUDITH ST.

TYPE= -2
REFL= 401.00FAC= 43560.0

HEAD	STORAGE	
401.00	0.00	
402.00	0.50	
404.00	3.08	
406.00	8.78	
408.00	15.57	
410.00	40.57	
	-1.0	

TABLE#= 3302
; OUTFLOW RATING CURVE FOR THE UPSTREAM OF JUDITH ST.

TYPE= -2
REFL= .00 FAC= 1.0

ELEVATION	FLOW	
0.00	0.00	
1.00	5.00	
2.50	15.00	
4.00	35.88	
6.00	60.88	
7.00	150.00	
8.00	400.00	
	-1	

; -----

TABLE#= 3303
; Stage-STORAGE RATING TABLE FOR UPSTREAM OF CAHOKIA ST.

TYPE= -2
REFL= .00FAC= 43560.0

HEAD	STORAGE	
403.00	0.00	0.00
404.00	1.50	0.50
406.00	10.00	3.08
408.00	16.00	8.78
410.00	25.57	15.57
412.00	40.57	40.57

-1.0
 TABLE#= 3304
 ; OUTFLOW RATING CURVE FOR THE UPSTREAM OF CAHOKIA ST.
 TYPE= -2
 REFL= .00 FAC= 1.0
 ELEVATION FLOW
 0.00 0.00 0.00
 1.00 6.00 5.00
 2.50 18.00 15.00
 4.00 43.00 35.88
 6.00 72.00 60.88
 7.00 180.00 150.00
 8.00 480.00 400.00
 -1

; -----
 TABLE#= 3305
 ; Stage-STORAGE RATING TABLE FOR UPSTREAM OF KINDER LANE
 TYPE= -2
 REFL= .00FAC= 43560.0
 HEAD STORAGE
 404.00 0.00 0.00
 405.00 0.50 0.50
 407.00 4.00 3.08
 409.00 10.78 8.78
 411.00 15.57 15.57
 413.00 40.57 40.57
 -1.0

TABLE#= 3306
 ; OUTFLOW RATING CURVE FOR THE UPSTREAM OF KINDER LANE
 TYPE= -2
 REFL= .00 FAC= 1.0
 ELEVATION FLOW
 0.00 0.00 0.00
 1.00 5.00 1.00
 2.50 15.00 3.00
 4.00 35.88 7.50
 6.00 60.88 10.00
 7.00 150.00 27.50
 8.00 400.00 72.00
 -1

; -----
 TABLE#= 3307
 ; Stage-STORAGE RATING TABLE FOR UPSTREAM OF JEROME LANE
 TYPE= -2
 REFL= .00FAC= 43560.0
 HEAD STORAGE
 404.00 0.00
 405.00 0.50
 407.00 3.08
 409.00 8.78
 411.00 15.57
 413.00 40.57
 -1.0

TABLE#= 3308
 ; OUTFLOW RATING CURVE FOR THE UPSTREAM OF JEROME LANE
 TYPE= -2
 REFL= .00 FAC= 1.0
 ELEVATION FLOW

0.00	0.00	0.00
1.00	2.00	5.00
2.50	6.00	15.00
4.00	14.00	35.88
6.00	24.00	60.88
7.00	60.00	150.00
8.00	160.00	400.00
-1		

; -----

TABLE#= 3309
; Stage-STORAGE RATING TABLE FOR UPSTREAM OF EDGAR ST.

TYPE= -2
REFL= .00FAC= 43560.0

HEAD	STORAGE
401.00	0.00
402.00	0.50
404.00	3.08
406.00	8.78
408.00	15.57
410.00	40.57
-1.0	

TABLE#= 3310
; OUTFLOW RATING CURVE FOR THE UPSTREAM OF EDGAR ST.

TYPE= -2
REFL= .00 FAC= 1.0

ELEVATION	FLOW
0.00	0.00
1.00	5.00
2.50	15.00
4.00	35.88
6.00	60.88
7.00	150.00
8.00	400.00
-1	

; -----

TABLE#= 3311
; Stage-STORAGE RATING TABLE FOR UPSTREAM OF PARK COLLEGE

TYPE= -2
REFL= .00FAC= 43560.0

HEAD	STORAGE
402.00	0.00
403.00	0.50
405.00	3.08
407.00	8.78
409.00	15.57
411.00	40.57
-1.0	

TABLE#= 3312
; OUTFLOW RATING CURVE FOR THE UPSTREAM OF PARK COLLEGE

TYPE= -2
REFL= .00 FAC= 1.0

ELEVATION	FLOW
0.00	0.00
1.00	4.00
2.50	13.50
4.00	31.50
6.00	54.00

7.00	135.00
8.00	360.00
-1	

; -----

TABLE#= 3313

; Stage-STORAGE RATING TABLE FOR UPSTREAM OF ROUTE 157

TYPE= -2

REFL= .00FAC= 43560.0

HEAD	STORAGE
401.50	0.00
402.50	0.50
404.50	3.08
406.50	8.78
408.50	15.57
410.50	40.57
-1.0	

TABLE#= 3314

; OUTFLOW RATING CURVE FOR THE UPSTREAM OF ROUTE 157

TYPE= -2

REFL= .00 FAC= 1.0

ELEVATION	FLOW
0.00	0.00
1.00	5.00
2.50	15.00
4.00	35.88
6.00	60.88
7.00	150.00
8.00	400.00
-1	

; -----

TABLE#= 3315

; Stage-STORAGE RATING TABLE FOR UPSTREAM OF ROUTE 3

TYPE= -2

REFL= .00FAC= 43560.0

HEAD	STORAGE
403.00	0.00
404.00	0.50
406.00	3.08
408.00	8.78
410.00	15.57
412.00	40.57
-1.0	

TABLE#= 3316

; OUTFLOW RATING CURVE FOR THE UPSTREAM OF ROUTE 3

TYPE= -2

REFL= .00 FAC= 1.0

ELEVATION	FLOW
0.00	0.00
1.00	5.00
2.50	15.00
4.00	35.88
6.00	60.88
7.00	150.00
8.00	400.00
-1	

; -----
 TABLE#= 3317
 ; Stage-STORAGE RATING TABLE FOR UPSTREAM OF OLD ROUTE 3

TYPE= -2
 REFL= .00FAC= 43560.0
 HEAD STORAGE
 402.00 0.00
 403.00 0.50
 405.00 3.08
 407.00 8.78
 409.00 15.57
 411.00 40.57
 -1.0

TABLE#= 3318
 ; OUTFLOW RATING CURVE FOR THE UPSTREAM OF OLD ROUTE 3
 TYPE= -2
 REFL= .00 FAC= 1.0

ELEVATION	FLOW
0.00	0.00
1.00	5.00
2.50	15.00
4.00	35.88
6.00	60.88
7.00	150.00
8.00	400.00
-1	

; -----
 TABLE#= 3319
 ; Stage-STORAGE RATING TABLE FOR UPSTREAM OF CARGILL ST.
 TYPE= -2
 REFL= .00FAC= 43560.0

HEAD	STORAGE
402.00	0.00
403.00	0.50
405.00	3.08
407.00	8.78
409.00	15.57
411.00	40.57
-1.0	

TABLE#= 3320
 ; OUTFLOW RATING CURVE FOR THE UPSTREAM OF CARGILL ST.
 TYPE= -2

REFL= .00 FAC= 1.0
 ELEVATION FLOW
 0.00 0.00
 1.00 5.00
 2.50 15.00
 4.00 35.88
 6.00 60.88
 7.00 150.00
 8.00 400.00
 -1

; -----
 TABLE#= 3321

; Stage-STORAGE RATING TABLE FOR UPSTREAM OF TERMINAL RR ROAD

TYPE= -2

REFL= .00FAC= 43560.0

HEAD	STORAGE
401.00	0.00
402.00	0.50
404.00	3.08
406.00	8.78
408.00	15.57
410.00	40.57
-1.0	

TABLE#= 3322

; OUTFLOW RATING CURVE FOR THE UPSTREAM OF TERMINAL RR ROAD

TYPE= -2

REFL= .00 FAC= 1.0

ELEVATION	FLOW
0.00	0.00
1.00	5.00
2.50	15.00
4.00	35.88
6.00	60.88
7.00	150.00
8.00	400.00
-1	

; -----

TABLE#= 3323

; Stage-STORAGE RATING TABLE FOR UPSTREAM OF LEVIN ROAD

TYPE= -2

REFL= .00FAC= 43560.0

HEAD	STORAGE	
398.00	0.00	
399.00	5.00	0.00
400.00	5.50	0.50
402.00	8.08	3.08
404.00	13.78	8.78
406.00	50.57	15.57
408.00	100.57	40.57
-1.0		

TABLE#= 3324

; OUTFLOW RATING CURVE FOR THE UPSTREAM OF LEVIN ROAD

TYPE= -2

REFL= .00 FAC= 1.0

ELEVATION	FLOW	
0.00	0.00	0.00
1.00	20.00	5.00
2.50	50.00	15.00
4.00	100.88	35.88
6.00	150.88	60.88
7.00	300.00	150.00
8.00	10000.00	400.00
-1		

; -----

Appendix E



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Appendix E
FEQ INPUTS FOR THE 100-YEAR STORM EVENT

DEAD CREEK FEQ HYDRAULIC MODEL, STEADY-STATE FLOW MODE
 DEVELOPED FOR, BY URS GREINER WOODWARD CLYDE, DENVER
 FOR THE 100-YEAR STORM EVENT, EXISTING CONDITIONS

*

NBRA=00026
 NEX=00082
 ; NEX=00058
 SOPER=YES
 *POINT=YES
 POINT=NO
 DIFFUS=NO
 WIND=NO
 UNDERFLOW=NO
 ZL=0.0
 STIME=1999/07/01:0.0
 ETIME=1999/07/02:24.0
 GRAV=32.2
 NODEID=YES
 SSEPS=0.1
 PAGE=99999
 EPSSYS=0.05 0.01 0.0
 MKNT= 5 0
 OUTPUT= 0
 PRTINT=99999
 GEQOPT=STDX
 EPSB=0.00005
 MAXIT= 30
 SFAC=5280.0
 QSMALL= 0.5
 IFRZ=00007

1350. 1200. 1000. 850. 700. 500. 350. 100. 50.
 900 1.00 0.8 2.7 3.4 2.4 2.0 0.5

MRE= 0.20 0.0

DWT=0.05

BWT=0.70

BWFDSN= 10DMEVENT.INI

CHKGEO=NO

ISTYLE=NEW

EXTTOL=0.1

SQREPS= 1.E30

GETIC=

PUTFC=

;

;

BRANCH DESCRIPTION TABLES

BNUM= 25

NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
2501	QUEENY	100	3.061	399.50				

DS_25 100 2.881 399.30

-1

BNUM= 24

NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
2401	US_24	100	2.881	399.30				

-1 JUDITH 100 2.701 399.10
 BNUM= 23
 NODE 2301 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 JUDITH 106 2.677 398.95

-1 DS_23 108 2.492 398.65
 BNUM= 22
 NODE 2201 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 US_22 108 2.492 398.65

-1 CAHOKIA 108 2.400 398.51
 BNUM= 21
 NODE 2101 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 CAHOKIA 114 2.378 398.65

-1 DS_21 116 2.346 398.19
 BNUM= 20
 NODE 2001 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 US_20 116 2.346 398.19

-1 KINDER 116 2.330 397.96
 BNUM= 19
 NODE 1901 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 KINDER 122 2.306 398.11

-1 DS_19 124 2.250 398.83
 BNUM= 18
 NODE 1801 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 US_18 124 2.250 398.83

-1
 BNUM= 17
 NODE 1701 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 JEROME 130 2.195 400.15

-1
 BNUM= 16
 NODE 1601 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 XS_300 300 2.100 396.97

-1
 BNUM= 15
 NODE 1501 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 EDGAR_U 132 2.023 398.20

-1
 BNUM= 14
 NODE 1401 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 DS_15 190 1.807 398.36

-1
 BNUM= 13
 NODE 1301 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 PARK_C 190 1.711 398.59

-1
 BNUM= 12
 NODE 1301 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 DS_13 140 1.506 398.61

1201	US_12	140	1.506	398.61				
-1	RT_157	140	1.472	398.76				
BNUM=	11							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
1101	RT_157	146	1.433	398.46				
-1	DS_11	148	1.368	398.25				
BNUM=	10							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
1001	US_10	148	1.368	398.25				
-1	ROUTE_3	148	1.336	398.14				
BNUM=	9							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
901	ROUTE_3	154	1.336	398.04				
-1	DS_09	156	1.335	398.01				
BNUM=	8							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
801	US_08	156	1.335	398.01				
-1	OLD_RT3	156	1.334	397.99				
BNUM=	7							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
701	OLD_RT3	162	1.318	398.29				
-1	DS_07	164	1.248	397.84				
BNUM=	6							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
601	US_06	164	1.248	397.84				
-1	CARGILL	164	1.213	397.61				
BNUM=	5							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
501	CARGILL	170	1.194	396.48				
-1	DS_05	172	1.192	396.45				
BNUM=	4							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
401	US_04	172	1.192	396.45				
-1	RROAD_U	172	1.191	396.44				
BNUM=	3							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM

301 RROAD_D 178 1.150 396.66

XS-304 303 0.988 396.44

; FARM_U 306 0.716 392.04
 FARM_U 307 0.716 396.16
 -1
 BNUM= 102
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 ;10201 FARM_U 306 0.716 392.04
 10201 FARM_U 307 0.716 396.16

FARM_D 308 0.467 391.36
 -1
 BNUM= 2
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 201 FARM 308 0.467 391.36

LEVIN_U 180 0.065 391.97
 -1
 BNUM= 1
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 101 LEVIN_D 186 0.044 393.62

PUMP 186 0.000 393.60
 -1
 ;
 ;
 NETWORK-MATRIX CONTROL INPUT
 CODE N1 N2 N3 N4 N5 N6 N7 N8 N9 N10 F1 F2 F3 F4 F5

```

;-----+
      6   1   F1    19001                      1.00
      7   F23001   1   F1
      4   2   F2   -1   F23002                  402.00
      2   2   F2   U25
* QUEENY ST.
      1   25
* Flow entering u/s of Judith St.
      6   1   F3    19002                      0.50
      7   F43301   1   F3
      4   2   F4   -1   F43302                  402.00
*
      2   3   D25  U24   F4
      11  D25  U24
      1   24
* Judith St.
;      5   6   D24  U23  D2410201020          401.50
;      5   6   D24  U23  D2410201020          1 402.28
;                                15201520          406.51
      2   2   D24  U23
      1   23
* Flow entering u/s of Cahokia St.
      6   1   F5    19003                      0.50
      7   F63303   1   F5
      4   2   F6   -1   F63304                  404.00
*
      2   3   D23  U22   F6
      11  D23  U22
      1   22
* CAHOKIA ST.
      5   6   D22  U21  D2210301030          1 399.58
;                                15301530          404.01
;                                15301530          406.01
      2   2   D22  U21
      1   21
* Flow entering u/s of Kinder Lane
      6   1   F7    19004                      0.50   1.00
      7   F83305   1   F7
      4   2   F8   -1   F83306                  404.00
*
      2   3   D21  U20   F8
      11  D21  U20
      1   20
* KINDER LANE
      5   6   D20  U19  D2010401040          1 399.20
;                                15401540          404.02
      2   2   D20  U19
      1   19
* Flow entering u/s of Jerome Lane
      6   1   F9    19005                      0.50
      7   F103307   1   F9
      4   2   F10   -1   F103308                  405.00
*
      2   3   D19  U18   F10
      11  D19  U18
      1   18
* JEROME LANE
      5   6   D18  U17  D1810501050          1 400.15
;                                15501550          405.02
      2   2   D18  U17
      1   17
* Flow entering u/s of Edgar St.

```

6	1	F11	19006	0.50
7	F123309	1	F11	
4	2	F12	-1 F123310	402.00
*				
2	3	D17	U16 F12	
11	D17	U16		
1	16			
*	EDGAR ST.			
5	6	D16	U15 D1610601060	1 399.22
			15601560	403.92
2	2	D16	U15	
1	15			
*	Flow entering u/s of Park College Culvert			
6	1	F13	19008	0.50 0.50
;	6	1	F13	1
7	F143311	1	F13	0.50
4	2	F14	-1 F143312	403.00
*				
2	3	D15	U14 F14	
11	D15	U14		
1	14			
*	PARK COLLEGE CULVERT + CHANRAT FLOW OVER THE FLOODPLAIN			
5	6	D14	U13 D1411401140	1 398.59
			12401240	404.02
2	2	D14	U13	
1	13			
*	Flow entering u/s of Route 157			
6	1	F15	19008	0.50 0.50
7	F163313	1	F15	
4	2	F16	-1 F163314	402.50
*				
2	3	D13	U12 F16	
11	D13	U12		
1	12			
*	ROUTE 157			
5	6	D12	U11 D1210701070	1 398.76
			15701570	407.82
2	2	D12	U11	
1	11			
*	Flow entering u/s of Route 3			
6	1	F17	19010	0.50 0.95
;	6	1	F17	1
7	F183315	1	F17	0.50
4	2	F18	-1 F183316	404.00
*				
2	3	D11	U10 F18	
11	D11	U10		
1	10			
*	ROUTE 3			
5	6	D10	U9 D1010801080	398.56
2	2	D10	U9	
1	9			
*	Flow entering u/s of Old Route 3			
6	1	F19	19010	0.50 0.05
7	F203317	1	F19	
4	2	F20	-1 F203317	403.00
*				
2	3	D9	U8 F20	
11	D9	U8		
1	8			
*	OLD ROUTE 3			
5	6	D8	U7 D810901090	398.29

2 2 D8 U7
 1 7
 * Flow entering u/s of Cargill St.
 ; 6 1 F21 19011 0.50
 6 1 F21 1 0.50
 7 F223319 1 F21
 4 2 F22 -1 F223320 403.00
 *
 2 3 D7 U6 F22
 11 D7 U6
 1 6
 * CARGILL
 5 6 D6 U5 D611001100 397.61
 2 2 D6 U5
 1 5
 * Flow entering u/s of Terminal RR Road
 6 1 F23 19012 0.50
 7 F243321 1 F23
 4 2 F24 -1 F243322 402.00
 *
 2 3 D5 U4 F24
 11 D5 U4
 1 4
 * TERMINAL RR ROAD
 5 6 D4 U3 D411101110 396.44
 2 2 D4 U3
 1 3
 * Flow entering d/s of Terminal RR Road
 6 1 F25 19013 0.50
 7 F263323 1 F25
 4 2 F26 -1 F263324 400.00
 *
 *
 2 3 D3U102 F26
 11 D3U102
 1 102
 * TANK FARM FLOOD-CONTROL FACILITY
 ; 6 1 F32 -1 0.0
 6 1 F32 19014 0.5
 7 F323011 1 F31
 14D102 U2 F3130123012 0.5 402.00
 *
 2 3D102 U2 F31
 11D102 U2
 1 2
 *
 5 6 D2 U1 D211201120 393.62
 2 2 D2 U1
 1 1
 ; 4 3 D1 -1 D1 0
 ; 6 2 D1 -1 398.50
 * Pumping station simulated by using Code 5, Type 3 relationship
 5 3 D1 F51 D1 19210 0 0 1CAHA 400.00 48.0 392.0 0.
 ; Dummy Branch for the D/S side of the Pump Station
 2 2 D1 F51
 15 F51 F52
 6 2 F52 -1 400.00
 -1
 ;
 BNODE=
 ;
 SPECIAL OUTPUT LOCATIONS

```

UNIT=DDCRK100.HYD
BRA NODE
 0   F1 Endpond
 0   F2 Endpond
 0   D24 JUDITH
 0   D22 CAHOKI
 0   D20 KINDER
 0   D18 JEROME
 0   D16 EDGAR
 0   D14 PARK_C
 0   D12 RT_157
 0   D10 ROUTE3
 0   D8 OLD_R3
 0   D6 CARGIL
 0   D4 R_ROAD
 0   D3 TANKF_U
 0 D102 TANKF_D
 0 F31 Side_ch
 0 U2 USLevin
 0 D2 LevinU
 0 U1 LevinD
 0 D1 Pump In
 0 CAHA PUMP
 0 F51 Outlet
-1

;
INPUT FILE SPECIFICATION
UNIT NAME
-1

;
OUTPUT FILE SPECIFICATION
UNIT BRA NODE ITEM TYPE NAME
-1

;
OPERATION OF CONTROL STRUCTURES AND/OR PUMPS
BLK=00001
BLKTYPE=PUMP
MINDT=600
PINIT=0.00
BRAN NODE KEY MNRATE RISE FALL ONPR OFPR
 0   D1 ELEV 0.01 9201 9202    1    2
-1
BLK=-1
;
FUNCTION TABLES
;
; Stage-time table at the end of MODEL for Dummy branch F51-F52.
; Used a constant elevation of 305 ft to assure
; that the flow at the other end of the levee does not affect
; the pumping inside the levee.
TABLE#= 9400
TYPE= -7
REFL=      0.0
YEAR MN DY     HOUR     HEAD   INFLOW HYDROGRAPH AT UPSTREAM END
1925 01 01      0.0    305.0
1949 01 01      0.0    305.0
                  12.0    305.0
                  24.0    305.0
1987 08 12      0.0    305.0
1999 12 31      0.0    305.0
                  24.0    305.0
                  -1.0

```

;
; Pumping Rate in cfs giving as a function of Head above 395.0 ft.
; In reality, the pumping rate could not be kept as a constant and should
; decrease as the head increases. However, to simplify the problem at
; this preliminary study, we are assuming a constant pumping rate.

TABLE#=9210

TYPE= -2

REFL= 396.0 FAC= 1.0

HEAD DISCHARGE

0.0	91.00
1.0	91.00
2.0	91.00
2.5	91.00
3.0	91.00
4.0	91.00
5.0	91.00
6.0	91.00
7.0	91.00
10.0	91.00
15.0	91.00

-1

TABLE#=9201

TYPE= -2

REFL= 0.0 FAC= 1.0

; Assume that pumping starts when the water level at the pump location
; reaches 397.00 ft and be closed when it drops to 396.5 ft.

ELEVATION RELSPEED CONTROL FOR THE OUTLET SIDE OF THE PUMP

395.0	0.00
396.0	0.00
397.0	0.00
397.1	1.00
397.5	1.00
398.0	1.00
398.1	1.00
399.0	1.00
400.0	1.00
401.0	1.00
402.0	1.00
405.0	1.00
415.0	1.00
445.0	1.00

-1

;

TABLE#=9202

TYPE= -2

REFL= 0.0 FAC= 1.0

ELEVATION RELSPEED CONTROL FOR THE OUTLET SIDE OF THE PUMP

395.0	-1.00
396.0	-1.00
396.5	-1.00
397.0	0.00
397.5	0.00
398.0	0.00
399.0	0.00
400.0	0.00
401.0	0.00
402.0	0.00
405.0	0.00
415.0	0.00
445.0	0.00

-1

```
;
TABLE#=3011
; Stage-STORAGE RATING TABLE FOR THE TANK FARM
TYPE= -2
REFL= 399.00 FAC= 43560.0
    HEAD   STORAGE
    399.00     0.00          0.00     0.00
    400.00     65.00         25.00     5.00
    401.00    130.00         93.00    23.00
    402.00    195.00        126.50    46.50
    403.00    260.00        255.50    55.50
    404.00    325.00        550.00    75.00
    405.00    390.00
    -1.0

;
TABLE#= -15C:\PROJECTS\DEADCRK\HYDROS\INF_100y.TAB
TABLE#= -15C:\PROJECTS\DEADCRK\XSECTION\LIN_RES.TAB
TABLE#= -15c:\projects\deadcrk\xsection\xs_ddcrk.tab
;
TABLE#= -15c:\projects\deadcrk\culverts\PARK_CHN.TAB
TABLE#= -15c:\projects\deadcrk\culverts\PARK-C.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_02.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_03.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_04.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_05.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_06.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_07.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_08.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_09.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_10.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_11.TAB
TABLE#= -15c:\projects\deadcrk\culverts\STRUC_12.TAB
TABLE#= -15c:\projects\deadcrk\culverts\tankfarm.tab
TABLE#= -1

;
FREE NODE INITIAL CONDITIONS
NODE NODEID      DEPTH DISCHARGE ELEVATION SIGN
  F1 ENDPONG    402.00      0.0       0.0     -1
  F2 ENDPOND    402.00      0.0       0.0      1
  F31 TANK_DS   401.01      0.0       0.0     -1
  F32 TANK_US   401.01      0.0       0.0      1
  F51 PUMP_IN   400.00      2.0       0.0     -1
  F52 PUMP_OT   400.00      2.0       0.0      1
  F3 JUDITHU   402.00      0.0       .00     -1
  F4 JUDITHD   402.00      0.0       .00      1
  F5 CAHOKIA   404.00      0.0       .00     -1
  F6 CAHOKIA   404.00      0.0       .00      1
  F7 KINDERU   404.00      0.0       .00     -1
  F8 KINDERD   404.00      0.0       .00      1
  F9 JEROMEU   405.00      0.0       .00     -1
  F10 JEROMED  405.00      0.0       .00      1
  F11 EDGAR_U  402.00      0.0       .00     -1
  F12 EDGAR_D  402.00      0.0       .00      1
  F13 PARK_CU  403.00      0.0       .00     -1
  F14 PARK_CD  403.00      0.0       .00      1
  F15 RT_157U  402.50      0.0       .00     -1
  F16 RT_157D  402.50      0.0       .00      1
  F17 ROUTE3U  404.00      0.0       .00     -1
  F18 ROUTE3D  404.00      0.0       .00      1
  F19 OLD_R3U  403.00      0.0       .00     -1
  F20 OLD_R3D  403.00      0.0       .00      1
  F21 CARGILL  403.00      0.0       .00     -1

```

F22 CARGILL	403.00	0.0	.00	1
F23 RROAD_U	402.00	0.0	.00	-1
F24 RROAD_D	402.00	0.0	.00	1
F25 T_FARMU	398.00	0.0	.00	-1
F26 T_FARMD	398.00	0.0	.00	1

;

BACKWATER ANALYSIS

BRANCH NUMBER=	-1
DISCHARGE=	2.0
BRANCH NUMBER=	-2
DISCHARGE=	2.0
BRANCH NUMBER=	-102
DISCHARGE=	2.0
BRANCH NUMBER=	-3
DISCHARGE=	2.0
BRANCH NUMBER=	-4
DISCHARGE=	2.0
BRANCH NUMBER=	-5
DISCHARGE=	2.0
BRANCH NUMBER=	-6
DISCHARGE=	2.0
BRANCH NUMBER=	-7
DISCHARGE=	2.0
BRANCH NUMBER=	-8
DISCHARGE=	2.0
BRANCH NUMBER=	-9
DISCHARGE=	2.0
BRANCH NUMBER=	-10
DISCHARGE=	2.0
BRANCH NUMBER=	-11
DISCHARGE=	2.0
BRANCH NUMBER=	-12
DISCHARGE=	2.0
BRANCH NUMBER=	-13
DISCHARGE=	2.0
BRANCH NUMBER=	-14
DISCHARGE=	2.0
BRANCH NUMBER=	-15
DISCHARGE=	2.0
BRANCH NUMBER=	-16
DISCHARGE=	2.0
BRANCH NUMBER=	-17
DISCHARGE=	2.0
BRANCH NUMBER=	-18
DISCHARGE=	2.0
BRANCH NUMBER=	-19
DISCHARGE=	2.0
BRANCH NUMBER=	-20
DISCHARGE=	2.0
BRANCH NUMBER=	-21
DISCHARGE=	2.0
BRANCH NUMBER=	-22
DISCHARGE=	2.0
BRANCH NUMBER=	-23
DISCHARGE=	2.0
BRANCH NUMBER=	-24
DISCHARGE=	2.0
BRANCH NUMBER=	-25
DISCHARGE=	2.0

BRA CODE ELEVATION EXN#

1	1	396.00
2		U1

102 U2
3 U102
4 U3
5 .00 U4
6 .25 U5
7 U6
8 0.0 U7
9 U8
10 U9
11 U10
12 U11
13 U12
14 U13
15 U14
16 0.1 U15
17 U16
18 U17
19 U18
20 U19
21 U20
22 U21
23 U22
24 U23
25 U24
;
;

-1

DEAD CREEK FEQ HYDRAULIC MODEL, STEADY-STATE FLOW MODE
 DEVELOPED FOR , BY URS GREINER WOODWARD CLYDE, DENVER
 ALT. #1, 100-YEAR STORM EVENT, CULVERT CLEAN-UP CONDITIONS

*

NBRA=00026
 NEX=00082
 ; NEX=00058
 SOPER=YES
 *POINT=YES
 POINT=NO
 DIFFUS=NO
 WIND=NO
 UNDERFLOW=NO
 ZL=0.0
 STIME=1999/07/01:0.0
 ETIME=1999/07/02:24.0
 GRAV=32.2
 NODEID=YES
 SSEPS=0.1
 PAGE=99999
 EPSSYS=0.05 0.01 0.0
 MKNT= 5 0
 OUTPUT= 0
 PRTINT=99999
 GEQOPT=STDX
 EPSB=0.00005
 MAXIT= 30
 SFAC=5280.0
 QSMALL= 0.5
 IFRZ=00007
 1350. 1200. 1000. 850. 700. 500. 350. 100. 50.
 900 1.00 0.8 2.7 3.4 2.4 2.0 0.5
 MRE= 0.20 0.0
 DWT=0.05
 BWT=0.70
 BWFDSN= 10DMEVENT.INI
 CHKGEO=NO
 ISTYLE=NEW
 EXTTOL=0.1
 SQREPS= 1.E30
 GETIC=
 PUTFC=
 ;
 ;
 BRANCH DESCRIPTION TABLES
 BNUM= 25
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 2501 QUEENY 100 3.061 399.50

DS_25 100 2.881 399.30
 -1
 BNUM= 24
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 2401 US_24 100 2.881 399.30

-1
 BNUM= 23
 NODE 2301 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 JUDITH 100 2.701 399.10
 JUDITH 106 2.677 398.95

-1
 BNUM= 22
 NODE 2201 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 DS_23 108 2.492 398.65
 US_22 108 2.492 398.65

-1
 BNUM= 21
 NODE 2101 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 CAHOKIA 108 2.400 398.51
 CAHOKIA 114 2.378 398.65

-1
 BNUM= 20
 NODE 2001 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 DS_21 116 2.346 398.19
 US_20 116 2.346 398.19

-1
 BNUM= 19
 NODE 1901 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 KINDER 116 2.330 397.96
 KINDER 122 2.306 398.11

-1
 BNUM= 18
 NODE 1801 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 DS_19 124 2.250 398.83
 US_18 124 2.250 398.83

-1
 BNUM= 17
 NODE 1701 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 JEROME 130 2.195 400.15

-1
 BNUM= 16
 NODE 1601 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 XS_300 300 2.100 396.97
 XS_300 300 2.100 396.97

-1
 BNUM= 15
 NODE 1501 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 EDGAR_U 132 2.023 398.20
 EDGAR_D 138 2.000 397.89

-1
 BNUM= 14
 NODE 1401 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 DS_15 190 1.807 398.36
 US_14 190 1.807 398.36

-1
 BNUM= 13
 NODE 1301 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 PARK_C 190 1.711 398.59
 PARK_C 196 1.575 398.31

-1
 BNUM= 12
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 DS_13 140 1.506 398.61

1201	US_12	140	1.506	398.61				
-1	RT_157	140	1.472	398.76				
BNUM=	11							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
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-1	DS_07	164	1.248	397.84				
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-1	CARGILL	164	1.213	397.61				
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-1	DS_05	172	1.192	396.45				
BNUM=	4							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
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-1	RROAD_U	172	1.191	396.44				
BNUM=	3							
NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM

301 RROAD_D 178 1.150 396.66

XS-304 303 0.988 396.44

; FARM_U 306 0.716 392.04
FARM_U 307 0.716 396.16

-1
BNUM= 102
NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
;10201 FARM_U 306 0.716 392.04
10201 FARM_U 307 0.716 396.16

FARM_D 308 0.467 391.36

-1
BNUM= 2
NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
201 FARM 308 0.467 391.36

LEVIN_U 180 0.065 391.97

-1
BNUM= 1
NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
101 LEVIN_D 186 0.044 393.62

PUMP 186 0.000 393.60

-1

;
;
NETWORK-MATRIX CONTROL INPUT
CODE N1 N2 N3 N4 N5 N6 N7 N8 N9 N10 F1 F2 F3 F4 F5

```

;-----+
      6   1   F1    19001                      1.00
      7   F23001   1   F1
      4   2   F2   -1   F23002                  402.00
      2   2   F2   U25
* QUEENY ST.
      1   25
* Flow entering u/s of Judith St.
      6   1   F3    19002                      0.50
      7   F43301   1   F3
      4   2   F4   -1   F43302                  402.00
*
      2   3   D25   U24   F4
      11  D25   U24
      1   24
* Judith St.
;     5   6   D24   U23   D2410201020          401.50
;     5   6   D24   U23   D2410201020          402.28
;                           15201520          406.51
      2   2   D24   U23
      1   23
* Flow entering u/s of Cahokia St.
      6   1   F5    19003                      0.50
      7   F63303   1   F5
      4   2   F6   -1   F63304                  404.00
*
      2   3   D23   U22   F6
      11  D23   U22
      1   22
* CAHOKIA ST.
      5   6   D22   U21   D2210301030          1 399.58
;                           15301530          404.01
;                           15301530          406.01
      2   2   D22   U21
      1   21
* Flow entering u/s of Kinder Lane
      6   1   F7    19004                      0.50  1.00
      7   F83305   1   F7
      4   2   F8   -1   F83306                  404.00
*
      2   3   D21   U20   F8
      11  D21   U20
      1   20
* KINDER LANE
      5   6   D20   U19   D2010401040          1 399.20
;                           15401540          404.02
      2   2   D20   U19
      1   19
* Flow entering u/s of Jerome Lane
      6   1   F9    19005                      0.50
      7   F103307   1   F9
      4   2   F10   -1   F103308                  405.00
*
      2   3   D19   U18   F10
      11  D19   U18
      1   18
* JEROME LANE
      5   6   D18   U17   D1810501050          1 400.15
;                           15501550          405.02
      2   2   D18   U17
      1   17
* Flow entering u/s of Edgar St.

```

6	1	F11	19006		0.50
7	F123309		1 F11		
4	2	F12	-1 F123310		402.00
*					
2	3	D17	U16 F12		
11	D17	U16			
1	16				
*	EDGAR ST.				
5	6	D16	U15 D1610601060	1 399.22	
			15601560	403.92	
2	2	D16	U15		
1	15				
*	Flow entering u/s of Park College Culvert				
6	1	F13	19008	0.50	0.50
;	6	1	F13	1	0.50
7	F143311		1 F13		
4	2	F14	-1 F143312		403.00
*					
2	3	D15	U14 F14		
11	D15	U14			
1	14				
*	PARK COLLEGE CULVERT + CHANRAT FLOW OVER THE FLOODPLAIN				
5	6	D14	U13 D1411401140	1 398.59	
			12401240	404.02	
2	2	D14	U13		
1	13				
*	Flow entering u/s of Route 157				
6	1	F15	19008	0.50	0.50
7	F163313		1 F15		
4	2	F16	-1 F163314		402.50
*					
2	3	D13	U12 F16		
11	D13	U12			
1	12				
*	ROUTE 157				
5	6	D12	U11 D1210701070	1 398.76	
			15701570	407.82	
2	2	D12	U11		
1	11				
*	Flow entering u/s of Route 3				
6	1	F17	19010	0.50	0.95
;	6	1	F17	1	0.50
7	F183315		1 F17		
4	2	F18	-1 F183316		404.00
*					
2	3	D11	U10 F18		
11	D11	U10			
1	10				
*	ROUTE 3				
5	6	D10	U9 D1010801080		398.56
2	2	D10	U9		
1	9				
*	Flow entering u/s of Old Route 3				
6	1	F19	19010	0.50	0.05
7	F203317		1 F19		
4	2	F20	-1 F203317		403.00
*					
2	3	D9	U8 F20		
11	D9	U8			
1	8				
*	OLD ROUTE 3				
5	6	D8	U7 D810901090		398.29

2 2 D8 U7
 1 7
 * Flow entering u/s of Cargill St.
 ; 6 1 F21 19011 0.50
 6 1 F21 1 0.50
 7 F223319 1 F21
 4 2 F22 -1 F223320 403.00
 *
 2 3 D7 U6 F22
 11 D7 U6
 1 6
 * CARGILL
 5 6 D6 U5 D611001100 397.61
 2 2 D6 U5
 1 5
 * Flow entering u/s of Terminal RR Road
 6 1 F23 19012 0.50
 7 F243321 1 F23
 4 2 F24 -1 F243322 402.00
 *
 2 3 D5 U4 F24
 11 D5 U4
 1 4
 * TERMINAL RR ROAD
 5 6 D4 U3 D411101110 396.44
 2 2 D4 U3
 1 3
 * Flow entering d/s of Terminal RR Road
 6 1 F25 19013 0.50
 7 F263323 1 F25
 4 2 F26 -1 F263324 400.00
 *
 *
 2 3 D3U102 F26
 11 D3U102
 1 102
 * TANK FARM FLOOD-CONTROL FACILITY
 ; 6 1 F32 -1 0.0
 6 1 F32 19014 0.5
 7 F323011 1 F31
 14D102 U2 F3130123012 0.5 402.00
 *
 2 3D102 U2 F31
 11D102 U2
 1 2
 *
 5 6 D2 U1 D211201120 393.62
 2 2 D2 U1
 1 1
 ; 4 3 D1 -1 D1 0
 ; 6 2 D1 -1 398.50
 * Pumping station simulated by using Code 5, Type 3 relationship
 5 3 D1 F51 D1 19210 0 0 1CAHA 400.00 48.0 392.0 0.
 ; Dummy Branch for the D/S side of the Pump Station
 2 2 D1 F51
 15 F51 F52
 6 2 F52 -1 400.00
 -1
 ;
 BNODE=
 ;
 SPECIAL OUTPUT LOCATIONS

UNIT=DCRK100A.HYD
 BRA NODE
 0 F1 Endpond
 0 F2 Endpond
 0 D24 JUDITH
 0 D22 CAHOKI
 0 D20 KINDER
 0 D18 JEROME
 0 D16 EDGAR
 0 D14 PARK C
 0 D12 RT_157
 0 D10 ROUTE3
 0 D8 OLD_R3
 0 D6 CARGIL
 0 D4 R_ROAD
 0 D3 TANKF_U
 0 D102 TANKF_D
 0 F31 Side_ch
 0 U2 USLevin
 0 D2 LevinU
 0 U1 Levind
 0 D1 Pump In
 0 CAHA PUMP
 0 F51 Outlet
 -1
;
 INPUT FILE SPECIFICATION
 UNIT NAME
 -1
;
 OUTPUT FILE SPECIFICATION
 UNIT BRA NODE ITEM TYPE NAME
 -1
;
 OPERATION OF CONTROL STRUCTURES AND/OR PUMPS
 BLK=00001
 BLKTYPE=PUMP
 MINDT=600
 PINIT=0.00
 BRAN NODE KEY MNRATE RISE FALL ONPR OFPR
 0 D1 ELEV 0.01 9201 9202 1 2
 -1
 BLK=-1
;
 FUNCTION TABLES
;
; Stage-time table at the end of MODEL for Dummy branch F51-F52.
; Used a constant elevation of 305 ft to assure
; that the flow at the other end of the levee does not affect
; the pumping inside the levee.
TABLE#= 9400
TYPE= -7
REFL= 0.0
YEAR MN DY HOUR HEAD INFLOW HYDROGRAPH AT UPSTREAM END
1925 01 01 0.0 305.0
1949 01 01 0.0 305.0
12.0 305.0
24.0 305.0
1987 08 12 0.0 305.0
1999 12 31 0.0 305.0
24.0 305.0
-1.0

```

;
; Pumping Rate in cfs giving as a function of Head above 395.0 ft.
; Assume that pumping starts when the water level at the pump location
; reaches 398.00 ft.
TABLE#=9210
TYPE= -2
REFL= 396.0 FAC= 1.0
  HEAD DISCHARGE
    0.0      91.00
    1.0      91.00
    2.0      91.00
    2.5      91.00
    3.0      91.00
    4.0      91.00
    5.0      91.00
    6.0      91.00
    7.0      91.00
   10.0      91.00
   15.0      91.00
      -1

;
TABLE#=9201
TYPE= -2
REFL= 0.0 FAC= 1.0
  ELEVATION RELSPEED CONTROL FOR THE OUTLET SIDE OF THE PUMP
    395.0      0.00
    396.0      0.00
    397.0      0.00
    397.1      1.00
    397.5      1.00
    398.0      1.00
    398.1      1.00
    399.0      1.00
    400.0      1.00
    401.0      1.00
    402.0      1.00
    405.0      1.00
    415.0      1.00
    445.0      1.00
      -1

;
TABLE#=9202
TYPE= -2
REFL= 0.0 FAC= 1.0
  ELEVATION RELSPEED CONTROL FOR THE OUTLET SIDE OF THE PUMP
    395.0     -1.00
    396.0     -1.00
    396.5     -1.00
    397.0      0.00
    397.5      0.00
    398.0      0.00
    399.0      0.00
    400.0      0.00
    401.0      0.00
    402.0      0.00
    405.0      0.00
    415.0      0.00
    445.0      0.00
      -1

;
TABLE#=3011
; Stage-STORAGE RATING TABLE FOR THE TANK FARM

```

```

TYPE= -2
REFL= 399.00 FAC= 43560.0
    HEAD   STORAGE
    399.00     0.00      0.00     0.00
    400.00     65.00     25.00     5.00
    401.00    130.00     93.00    23.00
    402.00    195.00    126.50    46.50
    403.00    260.00    255.50    55.50
    404.00    325.00    550.00    75.00
    405.00    390.00
    -1.0

;
TABLE#= -15C:\PROJECTS\DEADCRK\HYDROS\INF_100y.TAB
TABLE#= -15C:\PROJECTS\DEADCRK\XSECTION\LIN_RES.TAB
TABLE#= -15c:\projects\deadcrk\XSECTION\XS_DDCRK.TAB
;
TABLE#= -15c:\projects\deadcrk\CULVERTS\PARK_CHN.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\PARK-C.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_02.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_03.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_04.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_05.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_06.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_07.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_08.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_09.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_10.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_11.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_12.TAB
;
TABLE#= -15c:\projects\deadcrk\CULVERTS\ALTER_01.TAB
TABLE#= -15c:\projects\deadcrk\CULVERTS\TANKFARM.TAB
TABLE#= -1
;

FREE NODE INITIAL CONDITIONS
  NODE NODEID      DEPTH DISCHARGE ELEVATION SIGN
    F1 ENDPONG    402.00      0.0      0.0     -1
    F2 ENDPOND    402.00      0.0      0.0      1
    F31 TANK_DS   401.01      0.0      0.0     -1
    F32 TANK_US   401.01      0.0      0.0      1
    F51 PUMP_IN   400.00      2.0      0.0     -1
    F52 PUMP_OT   400.00      2.0      0.0      1
    F3 JUDITHU   402.00      0.0      .00     -1
    F4 JUDITHD   402.00      0.0      .00      1
    F5 CAHOKIA   404.00      0.0      .00     -1
    F6 CAHOKIA   404.00      0.0      .00      1
    F7 KINDERU   404.00      0.0      .00     -1
    F8 KINDERD   404.00      0.0      .00      1
    F9 JEROMEU   405.00      0.0      .00     -1
    F10 JEROMED  405.00      0.0      .00      1
    F11 EDGAR_U  402.00      0.0      .00     -1
    F12 EDGAR_D  402.00      0.0      .00      1
    F13 PARK_CU  403.00      0.0      .00     -1
    F14 PARK_CD  403.00      0.0      .00      1
    F15 RT_157U  402.50      0.0      .00     -1
    F16 RT_157D  402.50      0.0      .00      1
    F17 ROUTE3U  404.00      0.0      .00     -1
    F18 ROUTE3D  404.00      0.0      .00      1
    F19 OLD_R3U  403.00      0.0      .00     -1
    F20 OLD_R3D  403.00      0.0      .00      1
    F21 CARGILL  403.00      0.0      .00     -1
    F22 CARGILL  403.00      0.0      .00      1

```

F23 RROAD_U	402.00	0.0	.00	-1
F24 RROAD_D	402.00	0.0	.00	1
F25 T_FARMU	398.00	0.0	.00	-1
F26 T_FARMD	398.00	0.0	.00	1

;

BACKWATER ANALYSIS

BRANCH NUMBER= -1

DISCHARGE= 2.0

BRANCH NUMBER= -2

DISCHARGE= 2.0

BRANCH NUMBER= -102

DISCHARGE= 2.0

BRANCH NUMBER= -3

DISCHARGE= 2.0

BRANCH NUMBER= -4

DISCHARGE= 2.0

BRANCH NUMBER= -5

DISCHARGE= 2.0

BRANCH NUMBER= -6

DISCHARGE= 2.0

BRANCH NUMBER= -7

DISCHARGE= 2.0

BRANCH NUMBER= -8

DISCHARGE= 2.0

BRANCH NUMBER= -9

DISCHARGE= 2.0

BRANCH NUMBER= -10

DISCHARGE= 2.0

BRANCH NUMBER= -11

DISCHARGE= 2.0

BRANCH NUMBER= -12

DISCHARGE= 2.0

BRANCH NUMBER= -13

DISCHARGE= 2.0

BRANCH NUMBER= -14

DISCHARGE= 2.0

BRANCH NUMBER= -15

DISCHARGE= 2.0

BRANCH NUMBER= -16

DISCHARGE= 2.0

BRANCH NUMBER= -17

DISCHARGE= 2.0

BRANCH NUMBER= -18

DISCHARGE= 2.0

BRANCH NUMBER= -19

DISCHARGE= 2.0

BRANCH NUMBER= -20

DISCHARGE= 2.0

BRANCH NUMBER= -21

DISCHARGE= 2.0

BRANCH NUMBER= -22

DISCHARGE= 2.0

BRANCH NUMBER= -23

DISCHARGE= 2.0

BRANCH NUMBER= -24

DISCHARGE= 2.0

BRANCH NUMBER= -25

DISCHARGE= 2.0

BRA CODE ELEVATION EXN#

1 1 396.00

2 U1

102 U2

3 U102
4 U3
5 .00 U4
6 .25 U5
7 U6
8 0.0 U7
9 U8
10 U9
11 U10
12 U11
13 U12
14 U13
15 U14
16 0.1 U15
17 U16
18 U17
19 U18
20 U19
21 U20
22 U21
23 U22
24 U23
25 U24

-1

DEAD CREEK FEQ HYDRAULIC MODEL, STEADY-STATE FLOW MODE
 DEVELOPED FOR, BY URS GREINER WOODWARD CLYDE, DENVER
 ALTERNATIVE #2, MODEN DESIGN STANDARD, 100-YEAR STORM

*

NBRA=00038
 NEX=00106
 ; NEX=00058
 SOPER=YES
 *POINT=YES
 POINT=NO
 DIFFUS=NO
 WIND=NO
 UNDERFLOW=NO
 ZL=0.0
 STIME=1999/07/01:0.0
 ETIME=1999/07/02:24.0
 GRAV=32.2
 NODEID=YES
 SSEPS=0.1
 PAGE=99999
 EPSSYS=0.05 0.01 0.0
 MKNT= 5 0
 OUTPUT= 0
 PRTINT=99999
 GEQOPT=STDX
 EPSB=0.00005
 MAXIT= 30
 SFAC=5280.0
 QSMALL= 0.5
 IFRZ=00007

1350.	1200.	1000.	850.	700.	500.	350.	100.	50.
900	1.00	0.8	2.7	3.4	2.4	2.0	0.5	

MRE= 0.20 0.0

DWT=0.05

BWT=0.70

BWFDSN= 10DMEVENT.INI

CHKGEO=NO

ISTYLE=NEW

EXTTOL=0.1

SQREPS= 1.E30

GETIC=

PUTFC=

;

;

BRANCH DESCRIPTION TABLES

BNUM= 25

NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
2501	QUEENY	100	3.061	399.50				

DS_25 100 2.881 399.30

-1

BNUM= 24

NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
2401	US_24	100	2.881	399.30				

-1 JUDITH 100 2.701 399.10
 BNUM= 123
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 12301 JUDITH 100 2.701 399.10
 JUDITH 106 2.677 398.95
 -1 BNUM= 23
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 2301 JUDITH 106 2.677 398.95

-1 DS_23 108 2.492 398.65
 BNUM= 22
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 2201 US_22 108 2.492 398.65

-1 CAHOKIA 108 2.400 398.51
 BNUM= 121
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 12101 CAHOKIA 108 2.400 398.51
 CAHOKIA 114 2.378 398.65
 -1 BNUM= 21
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 2101 CAHOKIA 114 2.378 398.65

-1 DS_21 116 2.346 398.19
 BNUM= 20
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 2001 US_20 116 2.346 398.19

-1 KINDER 116 2.330 397.96
 BNUM= 119
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 11901 KINDER 116 2.330 397.96
 KINDER 122 2.306 398.11
 -1 BNUM= 19
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 1901 KINDER 122 2.306 398.11

-1
 BNUM= 18
 NODE 1801 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 US_18 124 2.250 398.83

-1
 BNUM= 117
 NODE 11701 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 JEROME 124 2.222 399.20
 JEROME 130 2.195 400.15
 -1
 BNUM= 17
 NODE 1701 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 JEROME 130 2.195 400.15

-1
 BNUM= 16
 NODE 1601 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 XS_300 300 2.100 396.97

-1
 BNUM= 115
 NODE 11501 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 EDGAR_U 132 2.023 398.20
 EDGAR_D 138 2.000 397.89
 -1
 BNUM= 15
 NODE 1501 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 EDGAR_D 138 2.000 397.89

-1 DS_15 190 1.807 398.36
 BNUM= 14
 NODE 1401 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 US_14 190 1.807 398.36

-1 PARK_C 190 1.711 398.59
 BNUM= 113
 NODE 11301 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 PARK_C 190 1.711 398.59
 PARK_C 196 1.575 398.31
 -1 BNUM= 13
 NODE 1301 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 PARK_C 196 1.575 398.31

-1 DS_13 140 1.506 398.61
 BNUM= 12
 NODE 1201 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 US_12 140 1.506 398.61

-1 RT_157 140 1.472 398.76
 BNUM= 111
 NODE 11101 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 RT_157 140 1.472 398.76
 RT_157 146 1.433 398.46
 -1 BNUM= 11
 NODE 1101 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 RT_157 146 1.433 398.46

-1 DS_11 148 1.368 398.25
 BNUM= 10
 NODE 1001 NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 US_10 148 1.368 398.25

-1 ROUTE_3 148 1.336 398.14

	BNUM=	109							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	10901	ROUTE_3	148	1.336	398.14				
		ROUTE_3	154	1.336	398.04				
-1									
	BNUM=	9							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	901	ROUTE_3	154	1.336	398.04				
-1									
	BNUM=	8							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	801	US_08	156	1.335	398.01				
-1									
	BNUM=	107							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	10701	OLD_RT3	156	1.334	397.99				
		OLD_RT3	162	1.318	398.29				
-1									
	BNUM=	7							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	701	OLD_RT3	162	1.318	398.29				
-1									
	BNUM=	6							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	601	US_06	164	1.248	397.84				
-1									
	BNUM=	105							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	10501	CARGILL	164	1.213	397.61				
		CARGILL	170	1.194	396.48				
-1									
	BNUM=	5							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	501	CARGILL	170	1.194	396.48				
-1									
	BNUM=	4							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	401	US_04	172	1.192	396.45				
-1									
	BNUM=	103							
	NODE	NODEID	XNUM	STATION	ELEVATION	KA	KD	HTAB	AZM
-1	10301	RROAD_U	172	1.191	396.44				
		RROAD_D	178	1.150	396.66				
-1									

BNUM= 3
NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
301 RROAD_D 178 1.150 396.66

XS-304 303 0.988 396.44

; FARM_U 306 0.716 392.04
; FARM_U 307 0.716 396.16

-1
BNUM= 102
NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
; 10201 FARM_U 306 0.716 392.04
10201 FARM_U 307 0.716 396.16

-1
BNUM= 2
NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
201 FARM 308 0.467 391.36

-1
LEVIN_U 180 0.065 391.97

BNUM= 101
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 10101 LEVIN_U 180 0.065 391.97
 LEVIN_D 186 0.044 393.62
 -1
 BNUM= 1
 NODE NODEID XNUM STATION ELEVATION KA KD HTAB AZM
 101 LEVIN_D 186 0.044 393.62

PUMP 186 0.000 393.60
 -1

;
;

NETWORK-MATRIX CONTROL INPUT

CODE	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	F1	F2	F3	F4	F5
6	1	F1	19001								1.00				
7	F23001		1	F1											
4	2	F2	-1	F23002							402.00				
2	2	F2	U25												
* QUEENY ST.															
1	25														
* Flow entering u/s of Judith St.															
6	1	F3	19002								0.50				
7	F43301		1	F3											
4	2	F4	-1	F43302							402.00				
*															
2	3	D25	U24	F4											
11	D25	U24													
1	24														
* Judith St.															
;	5	6	D24	U23	D2410201020						401.50				
;	5	6	D24	U23	D2410201020						402.28				
3	D24U123														
2	2	D24U123													
1	123														
3D123	U23														
2	2D123	U23													
1	23														
* Flow entering u/s of Cahokia St.															
6	1	F5	19003								0.50				
7	F63303		1	F5											
4	2	F6	-1	F63304							404.00				
*															
2	3	D23	U22	F6											
11	D23	U22													
1	22														
* CAHOKIA ST.															
;	5	6	D22	U21	D2210301030					1	399.58				
;					15301530						404.01				
3	D22U121														
2	2	D22U121													
1	121														
3D121	U21														
2	2D121	U21													
1	21														
* Flow entering u/s of Kinder Lane															

6 1 F7 19004	0.50	1.00
7 F83305 1 F7		
4 2 F8 -1 F83306	404.00	
*		
2 3 D21 U20 F8		
11 D21 U20		
1 20		
* KINDER LANE		
; 5 6 D20 U19 D2010401040	1 399.20	
; ; 15401540	403.77	
2 2 D20U119		
3 D20U119		
1 119		
3D119 U19		
2 2D119 U19		
1 19		
* Flow entering u/s of Jerome Lane		
6 1 F9 19005	0.50	
7 F103307 1 F9		
4 2 F10 -1 F103308	405.00	
*		
2 3 D19 U18 F10		
11 D19 U18		
1 18		
* JEROME LANE		
; 5 6 D18 U17 D1810501050	1 400.15	
; ; 15501550	405.02	
2 2 D18U117		
3 D18U117		
1 117		
3D117 U17		
2 2D117 U17		
1 17		
* Flow entering u/s of Edgar St.		
6 1 F11 19006	0.50	
7 F123309 1 F11		
4 2 F12 -1 F123310	402.00	
*		
2 3 D17 U16 F12		
11 D17 U16		
1 16		
* EDGAR ST.		
; 5 6 D16 U15 D1610601060	1 399.22	
; ; 15601560	403.92	
2 2 D16U115		
3 D16U115		
1 115		
3D115 U15		
2 2D115 U15		
1 15		
* Flow entering u/s of Park College Culvert		
6 1 F13 19008	0.50	0.50
6 1 F13 1	0.50	
7 F143311 1 F13		
4 2 F14 -1 F143312	403.00	
*		
2 3 D15 U14 F14		
11 D15 U14		
1 14		
* PARK COLLEGE CULVERT + CHANRAT FLOW OVER THE FLOODPLAIN		
; 5 6 D14 U13 D1411401140	1 398.59	
; ; 12401240	404.02	

2 2 D14U113
 3 D14U113
 1 113
 3D113 U13
 2 2D113 U13
 1 13
 * Flow entering u/s of Route 157
 6 1 F15 19008 0.50 0.50
 7 F163313 1 F15
 4 2 F16 -1 F163314 402.50
 *
 2 3 D13 U12 F16
 11 D13 U12
 1 12
 * ROUTE 157
 ; 5 6 D12 U11 D1210701070 1 398.76
 ; 15701570 407.82
 2 2 D12U111
 3 D12U111
 1 111
 3D111 U11
 2 2D111 U11
 1 11
 * Flow entering u/s of Route 3
 6 1 F17 19010 0.50 0.95
 ; 6 1 F17 1 0.50
 7 F183315 1 F17
 4 2 F18 -1 F183316 404.00
 *
 2 3 D11 U10 F18
 11 D11 U10
 1 10
 * ROUTE 3
 ; 5 6 D10 U9 D1010801080 398.56
 2 2 D10U109
 3 D10U109
 1 109
 3D109 U9
 2 2D109 U9
 1 9
 * Flow entering u/s of Old Route 3
 6 1 F19 19010 0.50 0.05
 7 F203317 1 F19
 4 2 F20 -1 F203317 403.00
 *
 2 3 D9 U8 F20
 11 D9 U8
 1 8
 * OLD ROUTE 3
 ; 5 6 D8 U7 D810901090 398.29
 2 2 D8U107
 3 D8U107
 1 107
 3D107 U7
 2 2D107 U7
 1 7
 * Flow entering u/s of Cargill St.
 ; 6 1 F21 19011 0.50
 6 1 F21 1 0.50
 7 F223319 1 F21
 4 2 F22 -1 F223320 403.00
 *

2 3 D7 U6 F22
 11 D7 U6
 1 6
 * CARGILL
 ; 5 6 D6 U5 D611001100 397.61
 2 2 D6U105
 3 D6U105
 1 105
 3D105 U5
 2 2D105 U5
 1 5
 * Flow entering u/s of Terminal RR Road
 6 1 F23 19012 0.50
 7 F243321 1 F23
 4 2 F24 -1 F243322 402.00
 *
 2 3 D5 U4 F24
 11 D5 U4
 1 4
 * TERMINAL RR ROAD
 ; 5 6 D4 U3 D411101110 396.44
 2 2 D4U103
 3 D4U103
 1 103
 3D103 U3
 2 2D103 U3
 1 3
 * Flow entering d/s of Terminal RR Road
 6 1 F25 19013 0.50
 7 F263323 1 F25
 4 2 F26 -1 F263324 400.00
 *
 *
 2 3 D3U102 F26
 11 D3U102
 1 102
 * TANK FARM FLOOD-CONTROL FACILITY
 ; 6 1 F32 -1 0.0
 6 1 F32 19014 0.5
 7 F323011 1 F31
 14D102 U2 F3130123012 0.5 402.00
 *
 2 3D102 U2 F31
 11D102 U2
 1 2
 * LEVIN ROAD
 ; 5 6 D2 U1 D211201120 393.62
 2 2 D2U101
 3 D2U101
 1 101
 3D101 U1
 2 2D101 U1
 1 1
 ; 4 3 D1 -1 D1 0
 ; 6 2 D1 -1 398.50
 * Pumping station simulated by using Code 5, Type 3 relationship
 5 3 D1 F51 D1 19210 0 0 1CAHA 400.00 48.0 396.0 0.
 ; Dummy Branch for the D/S side of the Pump Station
 2 2 D1 F51
 15 F51 F52
 6 2 F52 -1 400.00
 -1

```

;
BNODE=
;
SPECIAL OUTPUT LOCATIONS
UNIT=DCRK100B.HYD
BRA NODE
 0 F1 Endpond
 0 F2 Endpond
 0 D24 JUDITH
 0 D22 CAHOKI
 0 D20 KINDER
 0 D18 JEROME
 0 D16 EDGAR
 0 D14 PARK_C
 0 D12 RT_157
 0 D10 ROUTE3
 0 D8 OLD_R3
 0 D6 CARGIL
 0 D4 R_ROAD
 0 D3 TANKF_U
 0 D102 TANKF_D
 0 F31 Side_ch
 0 U2 USLevin
 0 D2 LevinU
 0 U1 LevinD
 0 D1 Pump In
 0 CAHA PUMP
 0 F51 Outlet
-1
;
INPUT FILE SPECIFICATION
UNIT NAME
-1
;
OUTPUT FILE SPECIFICATION
UNIT BRA NODE ITEM TYPE NAME
-1
;
OPERATION OF CONTROL STRUCTURES AND/OR PUMPS
BLK=00001
BLKTYPE=PUMP
MINDT=600
PINIT=0.00
BRAN NODE KEY MNRATE RISE FALL ONPR OFPR
 0 D1 ELEV 0.01 9201 9202 1 2
-1
BLK=-1
;
FUNCTION TABLES
;
; Stage-time table at the end of MODEL for Dummy branch F51-F52.
; Used a constant elevation of 305 ft to assure
; that the flow at the other end of the levee does not affect
; the pumping inside the levee.
TABLE#= 9400
TYPE= -7
REFL= 0.0
YEAR MN DY      HOUR     HEAD   INFLOW HYDROGRAPH AT UPSTREAM END
1925 01 01      0.0      305.0
1949 01 01      0.0      305.0
                    12.0     305.0
                    24.0     305.0

```

```

1987 08 12      0.0    305.0
1999 12 31      0.0    305.0
                  24.0   305.0
                  -1.0

;

; Pumping Rate in cfs giving as a function of Head above 395.0 ft.
; Assume that pumping starts when the water level at the pump location
; reaches 398.00 ft.

TABLE#=9210
TYPE= -2
REFL= 396.0 FAC= 1.0
HEAD DISCHARGE
 0.0    91.00
 1.0    91.00
 2.0    91.00
 2.5    91.00
 3.0    91.00
 4.0    91.00
 5.0    91.00
 6.0    91.00
 7.0    91.00
10.0    91.00
15.0    91.00
-1

;

TABLE#=9201
TYPE= -2
REFL= 0.0 FAC= 1.0
ELEVATION RELSPEED CONTROL FOR THE OUTLET SIDE OF THE PUMP
 395.0    0.00
 396.0    0.00
 397.0    0.00
 397.5    0.00
 398.0    0.00
 398.2    1.00
 399.0    1.00
 400.0    1.00
 401.0    1.00
 402.0    1.00
 405.0    1.00
 415.0    1.00
 445.0    1.00
-1

;

TABLE#=9202
TYPE= -2
REFL= 0.0 FAC= 1.0
ELEVATION RELSPEED CONTROL FOR THE OUTLET SIDE OF THE PUMP
 395.0    -1.00
 396.0    -1.00
 397.0    -1.00
 397.5    -1.00
 398.0    0.00
 399.0    0.00
 400.0    0.00
 401.0    0.00
 402.0    0.00
 405.0    0.00
 415.0    0.00
 445.0    0.00
-1
;
```

TABLE#=3011
; Stage-STORAGE RATING TABLE FOR THE TANK FARM
TYPE= -2
REFL= 399.00 FAC= 43560.0

HEAD	STORAGE		
399.00	0.00	0.00	0.00
400.00	65.00	25.00	5.00
401.00	130.00	93.00	23.00
402.00	195.00	126.50	46.50
403.00	260.00	255.50	55.50
404.00	325.00	550.00	75.00
405.00	390.00		
	-1.0		

;
TABLE#= -15C:\PROJECTS\DEADCRK\HYDROS\INF_100y.TAB
TABLE#= -15C:\PROJECTS\DEADCRK\XSECTION\LIN_RES.TAB
TABLE#= -15c:\projects\deadcrk\xsection\xs_ddcrk.tab
;
TABLE#= -15c:\projects\deadcrk\CULVERTS\PARK_CHN.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\PARK-C.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_02.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_03.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_04.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_05.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_06.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_07.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_08.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_09.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_10.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_11.TAB
;TABLE#= -15c:\projects\deadcrk\CULVERTS\STRUC_12.TAB
;
TABLE#= -15c:\projects\deadcrk\CULVERTS\ALTER_01.TAB
TABLE#= -15c:\projects\deadcrk\CULVERTS\TANKFARM.TAB
TABLE#= -1
;
FREE NODE INITIAL CONDITIONS

NODE	NODEID	DEPTH	DISCHARGE	ELEVATION	SIGN
F1	ENDPONG	402.00	0.0	0.0	-1
F2	ENDPOND	402.00	0.0	0.0	1
F31	TANK_DS	401.01	0.0	0.0	-1
F32	TANK_US	401.01	0.0	0.0	1
F51	PUMP_IN	400.00	2.0	0.0	-1
F52	PUMP_OT	400.00	2.0	0.0	1
F3	JUDITHU	402.00	0.0	.00	-1
F4	JUDITHD	402.00	0.0	.00	1
F5	CAHOKIA	404.00	0.0	.00	-1
F6	CAHOKIA	404.00	0.0	.00	1
F7	KINDERU	404.00	0.0	.00	-1
F8	KINDERD	404.00	0.0	.00	1
F9	JEROMEU	405.00	0.0	.00	-1
F10	JEROMED	405.00	0.0	.00	1
F11	EDGAR_U	402.00	0.0	.00	-1
F12	EDGAR_D	402.00	0.0	.00	1
F13	PARK_CU	403.00	0.0	.00	-1
F14	PARK_CD	403.00	0.0	.00	1
F15	RT_157U	402.50	0.0	.00	-1
F16	RT_157D	402.50	0.0	.00	1
F17	ROUTE3U	404.00	0.0	.00	-1
F18	ROUTE3D	404.00	0.0	.00	1
F19	OLD_R3U	403.00	0.0	.00	-1
F20	OLD_R3D	403.00	0.0	.00	1

F21 CARGILL	403.00	0.0	.00	-1
F22 CARGILL	403.00	0.0	.00	1
F23 RROAD_U	402.00	0.0	.00	-1
F24 RROAD_D	402.00	0.0	.00	1
F25 T_FARMU	398.00	0.0	.00	-1
F26 T_FARMD	398.00	0.0	.00	1

;

BACKWATER ANALYSIS

BRANCH NUMBER=	-1
DISCHARGE=	2.0
BRANCH NUMBER=	-101
DISCHARGE=	2.0
BRANCH NUMBER=	-2
DISCHARGE=	2.0
BRANCH NUMBER=	-102
DISCHARGE=	2.0
BRANCH NUMBER=	-103
DISCHARGE=	2.0
BRANCH NUMBER=	-3
DISCHARGE=	2.0
BRANCH NUMBER=	-4
DISCHARGE=	2.0
BRANCH NUMBER=	-5
DISCHARGE=	2.0
BRANCH NUMBER=	-105
DISCHARGE=	2.0
BRANCH NUMBER=	-6
DISCHARGE=	2.0
BRANCH NUMBER=	-7
DISCHARGE=	2.0
BRANCH NUMBER=	-107
DISCHARGE=	2.0
BRANCH NUMBER=	-8
DISCHARGE=	2.0
BRANCH NUMBER=	-9
DISCHARGE=	2.0
BRANCH NUMBER=	-109
DISCHARGE=	2.0
BRANCH NUMBER=	-10
DISCHARGE=	2.0
BRANCH NUMBER=	-11
DISCHARGE=	2.0
BRANCH NUMBER=	-111
DISCHARGE=	2.0
BRANCH NUMBER=	-12
DISCHARGE=	2.0
BRANCH NUMBER=	-13
DISCHARGE=	2.0
BRANCH NUMBER=	-113
DISCHARGE=	2.0
BRANCH NUMBER=	-14
DISCHARGE=	2.0
BRANCH NUMBER=	-15
DISCHARGE=	2.0
BRANCH NUMBER=	-115
DISCHARGE=	2.0
BRANCH NUMBER=	-16
DISCHARGE=	2.0
BRANCH NUMBER=	-17
DISCHARGE=	2.0
BRANCH NUMBER=	-117
DISCHARGE=	2.0

BRANCH NUMBER= -18
 DISCHARGE= 2.0
 BRANCH NUMBER= -19
 DISCHARGE= 2.0
 BRANCH NUMBER= -119
 DISCHARGE= 2.0
 BRANCH NUMBER= -20
 DISCHARGE= 2.0
 BRANCH NUMBER= -21
 DISCHARGE= 2.0
 BRANCH NUMBER= -121
 DISCHARGE= 2.0
 BRANCH NUMBER= -22
 DISCHARGE= 2.0
 BRANCH NUMBER= -23
 DISCHARGE= 2.0
 BRANCH NUMBER= -123
 DISCHARGE= 2.0
 BRANCH NUMBER= -24
 DISCHARGE= 2.0
 BRANCH NUMBER= -25
 DISCHARGE= 2.0

BRA CODE	ELEVATION	EXN#
1	1	398.00
101		U1
2		U101
102		U2
3		U102
103		U3
4		U103
5	.00	U4
105		U5
6	.00	U105
7		U6
107		U7
8	0.0	U107
9		U8
109		U9
10		U109
11		U10
111		U11
12		U111
13		U12
113		U13
14		U113
15		U14
115		U15
16	0.0	U115
17		U16
117		U17
18		U117
19		U18
119		U19
20		U119
21		U20
121		U21
22		U121
23		U22
123		U23
24		U123
25		U24

-1